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Flexible and Fit: Examining the Relationship Between Flexible Work Arrangements and Employee Health

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FLEXIBLE AND FIT: EXAMINING THE RELATIONSHIP BETWEEN FLEXIBLE WORK ARRANGEMENTS AND EMPLOYEE HEALTH

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ABSTRACT

Flexible work arrangements have the potential to simultaneously benefit organizations and their employees (Galinsky, Sakai, & Wigton, 2011), and have been classified as an essential component to an effective workplace. Flexibility may positively influence health behaviors and health outcomes through empowering employees to control the organization of their work demands and outside activities (Casey & Gzywacz, 2008), and through helping to buffer the negative effects of work demands. This study hypothesized positive relationships between subjective flexibility and health outcomes through improved health behaviors. Work demands were expected to negatively influence health outcomes through decreased health behaviors, though these relationships were expected to be buffered by flexibility. Family supportive supervisor behaviors (FSSB) were expected to moderate such relationships, increasing positive relationships between flexibility and health behaviors, and buffering negative relationships with demands. Structural equation modeling was used to analyze longitudinal data collected through Amazon's Mechanical Turk (N=470). Overall, results revealed positive relationships with flexibility and negative associations with demands to employee health, though many pathways were nonsignificant. FSSB did not moderate relationships with flexibility, but did buffer negative relationships with demands. Flexibility did not act as a buffer to demands. Findings help to contribute to a limited body of research linking flexibility to health behaviors and outcomes, and offer unique contributions in examining multiple perspectives of an employee's work arrangements and health indicators in a comprehensive model.

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CHAPTER ONE

INTRODUCTION

Overview of Past Research

Flexibility in the workplace serves as an important and effective resource for employees, allowing them to determine the timing, duration, and location of completing their job tasks (Lewis, 2003). Such arrangements are often offered in hopes of attracting and retaining top talent through increasing employees' satisfaction, work-life balance, and organizational commitment (Allen, Golden, & Shockley, 2015). In addition to offering flexible work arrangements as a family-friendly benefit, researchers and public advocates have also called for companies to offer flexible work arrangements in order to help promote employee health and well-being (Corporate Voices for Working Families & WFD Consulting, 2005; Halpern, 2005) and to help address the increasing interest from organizations in improving employee health, both for the wellness of their workers and in hopes of lowering health costs (Kaiser Family Foundation, 2006).

Flexibility may emerge in the form of altering work hours or work locations, and can occur both through formal policies and agreements or more informal understandings. Flexible work arrangements in regards to scheduling refers to altering the temporal components of the job and may be represented through flextime (i.e., setting start and end times), or compressed workweeks (i.e., working more hours over fewer days). Location flexibility, on the other hand, refers to autonomy in determining the physical location of where an employee completes their work tasks and is often represented through

telecommuting or remote work (e.g., working from home or alternative location other than the main office) (Casey & Grzywacz, 2008).

Flexible work arrangements may be fixed, such as an employee working 7:00 a.m. to 3:00 p.m. rather than the more traditional hours of 9:00 a.m. to 5:00 p.m. in order to be home with their children in the afternoon. Arrangements may also be variable, allowing employees to alter their work arrangements on a day-to-day or week-to-week basis to accommodate changing life demands, or occasional, which is most often aligned with just in time solutions, such as an employee leaving early when a child is sick (Swanberg, Pitt-Catsouphes, & Drescher-Burke, 2005).

Although flexibility has been tied to a multitude of important employee and organizational outcomes such as increased employee performance and improved job attitudes (Allen et al., 2015; Civian et al., 2008; Galinsky et al., 2011), much less is known about the relationship between flexibility at work and employee health, and the current body of research has been recognized as being underdeveloped, both conceptually and empirically (Grzywacz, Carlson, & Shulkin, 2008). It has been theorized that flexibility at work can promote employees' health and well-being by enabling them to better balance work demands with other commitments and activities (Casey & Grzywacz, 2008). However, the body of research as it stands is limited and consists of unclear or inconsistent findings.

More specifically, the current body of research is not only scarce, but is lacking rigorous design and valid measurement, and researchers have called for additional investigations to help answer questions surrounding the effects of flexible arrangements

on employee health, and to help clarify unclear and inconsistent findings (Allen, Golden, & Shockley, 2015; Casey & Grzywacz, 2008). Halpern (2005) explains that most research has focused on a single portion of a complex, dynamic model of variables related to flexibility, missing important opportunities to examine their relationships and interactions in a more comprehensive model. Many studies capture one type of flexibility at a time, such as flextime or telecommuting, but few have looked at an array of flexible work arrangements together. These approaches miss opportunities to assess comparisons of different arrangements, an area which researchers have called to be examined (Casey & Grzywacz, 2008) and has been captured in this study's design.

In regards to measuring health, Casey and Grzywacz (2008) have noted that the relationships with flexibility may vary based on the health outcome in strength and degree, and may be related to certain aspects of health, but not others. However, many previous studies have used only single measures of subjective ratings of overall health, thus potentially overestimating or underestimating the effects of flexibility, which could be problematic when advising organizations and managers in the benefits of flexible work arrangements. The authors recommended future studies collect more specific data using validated and reliable measures of health and well-being. Through distinctly measuring multiple health behaviors and health outcomes, the present study contributes empirical evidence connecting flexibility and demands to specific health indicators, and through doing so in a single study, offers insight into the comparative strength of such relationships.

Additionally, when considering timing of effects, most studies have analyzed samples of cross-sectional data (Casey & Grzywacz, 2008). Researchers have emphasized the need for more longitudinal studies that examine the temporal and dynamic components of flexibility, recognizing that all flexible work arrangements are not clear cut, and may vary in levels of accessibility, extent, and comfort with utilization over time (Butler et al., 2009; Casper et al., 2007). The current study helps to add to the literature through employing a longitudinal approach measuring flexibility at Time 1 and health behaviors and health outcomes at Time 2.

Lastly, many studies have used data from a single industry or organization, and often from one that presents high levels of flexibility. This approach sacrifices generalizability and opportunities to capture variability between companies or differing flexible policies provided (Halpern, 2005). Researchers have called for more generalizable samples using a longitudinal method (Casey & Grzywacz, 2008). The current study has addressed this request through using a diverse secondary data set representing various industries, working arrangements, and demographics, increasing generalizability for the findings.

Purpose of the Current Study

As the quest for organizations to obtain benefits from flexible work arrangements and to improve health and wellness grows and continues, there is a strong need to produce research that contributes to a knowledge base that can be used to help inform and guide organizations in how to best structure flexible work arrangements for employees, and presents documentation and justification for doing so. The purpose of this study was

to work to identify influences from flexibility to health outcomes through improved health behaviors. This study builds upon past research documenting associations between flexibility and health (e.g., Halpern, 2005; Grzywacz et al., 2008), and presents unique contributions through being the first to explore the mediated relationship from flexibility to health behaviors to health outcomes over time, and through exploring a multitude of health behaviors and health outcomes in a comprehensive model. Furthermore, the present study sought to better distinguish the relationships of flexibility to health by exploring potential interactive effects with family supportive supervisor behaviors (FSSB), as well as the potential buffering effects flexibility and FSSB may exhibit on the negative relationships between the demands of work hours and commute time to employee health.

More specifically, the current study sought to explore longitudinal relationships between flexible work arrangements and employee health through measures of flexibility perceptions at Time 1 to employee health behaviors (e.g., exercise), to employee health outcomes (e.g., physical symptoms) at Time 2. In addition, very few studies have examined the moderating effects of flexibility, and thus the current study explored the buffering effect of perceptions of flexibility on the negative relationship from work demands (e.g., work hours) at Time 1 to health behaviors at Time 2. Further, FSSB was examined as a potential moderator, as it was hypothesized FSSB would enhance relationships of flexibility and health behaviors, and buffer effects of work demands to health.

In sum, the study aimed to expand the current literature on flexibility through providing unique contributions in 1) offering insights into the largely unexplored connections between flexibility and health, 2) examining relationships over time, and in 3) examining how such relationships may occur through engaging in specific health behaviors. The study also adds value in 4) presenting a number of influential variables in a comprehensive model, allowing for the examination of comparative effects, such as schedule versus location flexibility, and with 5) the exploration of interactive effects, such as with flexibility and FSSB.

A summary figure of all hypothesized relationships can also be found in Figure 1. This figure highlights the predicted positive relationships from schedule and location flexibility to health outcomes of subjective health, role functioning, lowered burnout, and lowered body mass index (BMI), mediated by health behaviors of physical activity, sleep, and lowered risk behaviors. The anticipated moderation of FSSB, enhancing of the relationships between flexibility and health behaviors when higher levels are present, is also displayed. Negative relationships between work demands of work hours and commute time to health outcomes through decreased health behaviors are also illustrated, as well as the hypothesized buffering effect of flexibility (schedule and location) and FSSB on the relationship between work demands and health behaviors.

To introduce the study in more detail, the remainder of the Introduction presents information on flexible work arrangements and their relation to health behaviors and health outcomes. Next, the hypothesized interactive effects with work demands and FSSB are described. The paper continues with a summary of the proposed hypotheses,

description of the Method and analysis, a summary of Results, and ends with a Discussion of study implications, limitations, and final conclusions.

CHAPTER TWO

THEORETICAL BACKGROUND

Flexibility is viewed as a resource, allowing employees to fit their work schedule and environment to better meet their demands, and a form of control, in giving employees discretion on when and where to work. Highlighting the importance of resources and control, and in working at an optimal time and place, are the theories of Job Demands-Resources, Job Demands-Control, and Person Environment Fit, each described below.

The Job Demands-Resources model (JD-R) describes the dual effect of demands, which can be thought of as work tasks that require effort and skill, and resources, described as factors that help employees achieve their tasks and goals, on organizational outcomes through affected levels of engagement and strain. Demands and resources may appear as physical, psychological, social, or organizational aspects of a job (Bakker & Demerouti, 2007). While a high level of demands may deplete engagement and increase strain, resources are said to increase engagement and lower levels of strain, as well to have the potential to buffer the negative effects of demands. Important to the present study, flexibility can be viewed as a resource, helping employees to organize their schedule in a way they can best handle their demands, increasing engagement and alleviating strain. Work hours and commute time can be classified as demands, increasing strain. However, according to the JD-R, having the resource of flexibility to draw upon can at least partially alleviate the negative effects of demands on health.

The Job-Demands Control model (JD-C) is similar to the JD-R, yet distinct in that it classifies control as the sole and crucial resource to help employees cope with

demands. This model explains how an employee's ability to make decisions related to work can mitigate negative effects of work demands (Karasek, 1979; Karasek & Theorell, 1990). Giving employees the discretion to choose when and where to work is a way to grant employees control. Various forms of increased control (e.g., autonomy, skill discretion) have been consistently associated with positive outcomes for both the employee and organization, including high levels of job satisfaction, motivation, and performance (de Jonge, van Breukelen, Landeweerd, & Nijhuis, 1999; Spector, 1986). Control has also been linked to positive health outcomes, such as with decreased symptoms of illness (Kasarek, 1990). On the other hand, a lack of job control has been connected to negative outcomes such as anxiety, depression, and burnout (Parker, 2014). A lack of job control has also been connected to illnesses, being classified as one of the strongest predictors to coronary heart disease in a longitudinal study with 7372 participants (Marmot, Bosma, Hemingway, Brunner, & Stansfeld, 1997).

Schreurs, Van Emmerik, Notalaers, and De Witte (2010) also found a moderating effect of job control for health, in that it significantly buffered the negative relationship to general health from increased job insecurity. Findings from Hughes and Parkes (2007) also found support for the JD-C relationship in regards to flexibility in work hours, showing that control over work hours moderated the relationship between work hours and work-family interference, such that increased control buffered the negative effect of longer work hours in a sample of female public employees. When applied to the present study, employees with increased resources (i.e., flexibility) providing increased control (i.e., discretion in setting their own flexible hours or workplaces) to better organize their

pathways to meet demands (e.g., work hours) should experience more positive benefits and less negative effects. More specifically, they should have more opportunities and capacity to engage in health behaviors and be better able to organize their working time to avoid stressors that may negatively affect health.

Lastly, Person Environment Fit theory (P-E fit) describes how the match between an employee's characteristics and preferences and their environment have important effects. Such compatibility may refer to congruence in an employee's skills and their job tasks, individual and organizational values, individual preferences for rewards and those given, to name a few. Important to the present study, P-E fit also lends itself to describe the benefits of employee's matching their preferences to the environmental factors and working conditions of the job (Kristof-Brown & Guay, 2011).

Thus, P-E fit helps to explain the link between flexibility and health by highlighting that those with more resources and control can alter their environment in the form of when and where they work and thereby adapt their environment to best match their individual preferences and needs. Employees with flexible work arrangements can set hours that sync best with their circadian rhythm and their energy patterns to engage in work demands and health behaviors. Further, flexibility may also help employees lessen their exposure to demands and stressors that may create stress or harm one's health and well-being (Grzywacz et al., 2008). Researchers have also found empirical support for this notion, suggesting that flexibility allows employees to alter their working hours to work when and where is best for them, reducing stressors and distractions, and taking

breaks whenever needed, which can help to increase well-being and decrease strain (Ala-Mursula, Vahtera, Linna, Pentti & Kivimaki, 2005).

CHAPTER THREE

FLEXIBILITY

As described above, flexible work arrangements refer to policies or practices that enable employees to control when and/or where they work by adjusting their schedule or location. Such arrangements are often offered as resources or benefits to employees in order to help them balance work demands with life demands, such as family responsibilities or personal activities (Butler, Grzywacz, Ettner, & Liu, 2009; Lewis, 2003). The present study examined both factors of flexibility, answering for the call for a deeper understanding of the different types of flexible work arrangements, and moving away from either the use of broad, overall perceptions, or examining just a single type of flexibility that has frequently been used in past research (Casey & Grzywacz, 2008; Halpern, 2005).

When considering its' importance and frequency, flexibility has been rated a high priority to employees, supported by a 2000 national survey which found that 79% of workers indicated that access to a flexible schedule was "very important to them" (Rayman, Carre, Cintron, & Quinn, 2000), and in a 2008 National Study of the Changing Workforce, in which 87% of employees reported that when looking for a new job, having access to flexibility in the workplace would be "extremely" or "very" important to them (Galinsky, Sakai, & Wigton, 2011). It is then unsurprising that the presence of flexibility in the workplace is increasing. In May of 1991, 15.1% of full-time and salaried workers had access to flexible work schedules, while in May of 1997; this percentage rose to 27.6% of employees, and was raised to 28.8% in 2001. (U.S. Department of Labor,

2002). Furthermore, a 2005 report from the Bureau of Labor Statistics shows that 28% of employees had access to flexible work arrangements, while in 2015, WorldatWork reported that, based on their latest survey, more than 80% of organizations offered a flexibility program to some or all of their employees, though it is important to note that the results were based off a small sample of 379 responses. When comparing types of flexibility, Galinsky et al. (2011) found that many more employees have access to flextime (45%) and compressed workweeks (36%) than flexplace (16%).

Flexibility has been tied to a multitude of positive outcomes, most often in the form of increased work-family balance and decreased work-family conflict. For example, Kelley, Moen, and Tranby, 2011 found increased schedule control to predict increased work-family balance, while Golden, Veiga, and Simsek (2006) found telecommuting to predict decreased work-family conflict. In turn, organizations hope to gain resources from employees. It has been argued that flexibility can enable employees to be better workers, increasing productivity and performance through decreased interruptions when working and the ability to work at the time or place when they can be most effective, as well as through improved attitudes, such as increased satisfaction, engagement, organizational commitment, and decreased turnover intentions (Grzywacz et al., 2008; Manochehri & Pinkerton, 2003; Halpern, 2005).

Halpern (2005) found that the more time-flexibility policies an employee reported having access to, the more likely they were to report higher commitment, lower symptoms of stress, less absenteeism, and fewer missed deadlines. A 2007 meta-analysis by Ganjendran and Harrison also supported such associations for flexibility specific to

work locations, finding that telecommuting status predicted increased reports of autonomy, decreased work-family conflict, and affected job outcomes such as satisfaction, performance, and turnover intentions.

Important to the present study, employees with more flexibility may have the latitude and energy to engage in more health behaviors and have higher levels of health and well-being, and be better equipped to handle work demands. As mentioned above, organizations are seeking to increase employee health and wellness, in order to reap the positive benefits (e.g., increased productivity and employee performance), and in hopes of lowering their health care costs. Past research has found employees with higher levels of overall perceived flexibility to be less likely to be out from work or have issues with work-related impairment, (Casey & Grzywacz, 2008; Halpern, 2005). Furthermore, a recent intervention study demonstrated that after having implemented an intervention for leaders to focus on results more than work hours and location, the organization reported lower health costs (Barbosa et al., 2015).

Past research, while limited, has presented relevant preliminary findings that link flexibility to health outcomes. More specifically, overall perceived flexibility has been found to be related to increased self-reported health (Butler et al., 2009), while time flexibility has been connected to decreased stress (Halpern, 2005). Similarly, self-reported access to schedule flexibility has been associated with lowered cholesterol and somatic complaints (Thomas & Ganster, 1995). Higher ratings of perceived flexibility have also been related to health behaviors such as sleep and self-appraised lifestyle (Grzywacz et al., 2007). However, this small body of research also presents mixed

results. For example, Lapierre and Allen (2006) reported no relationship between employees' engagement in flextime practices and their self-reported well-being or physical health.

Despite the documented positive outcomes in some studies and its increasing prevalence, flexibility is still associated with organizational concerns and a number of potential drawbacks. For instance, an increased ability to control work hours has been related to an increase in supplemental work, or completing additional work tasks, which has been argued leads to an inability to detach from work and engage in recovery, and thus, negative health implications (Arlinghaus & Nachreiner 2014; Ninaus, Diehl, Terlutter, Chan, & Huang, 2015).

There may also be instances where flexible work arrangements become inflexible, such as with compressed work weeks, in which workers have little control over their situation once they are set to work longer hours over less days. Such arrangements are more likely to present null or negative effects in the literature when compared to other flexible arrangements (Grzywacz et al., 2008). For instance, Martens, Nijhuis, Boxtel, and Knotternerus (1999) reported that employees working compressed work weeks indicated more health complaints, sleep problems, and lower psychological well-being, as did those with rotating shifts and irregular and changing hours.

However, it has been argued that the key distinction between seeing negative or positive health outcomes is largely reliant on the employee's autonomy in the situation and ability to control their work schedule to fit with their life demands (Martens et al., 1999). In fact, employees who report a lack of control over their work schedules (e.g.,

who may be forced to work mandatory overtime) report poorer health (Golden & Wiens-Tuers, 2006; Trinkoff et al., 2006), and perceived control has been identified as a mediating process between flexible work schedules and lowered health symptoms (Thomas & Ganster, 1995).

Researchers have also voiced concerns that when organizations offer flexibility, employees may be expected to repay the organization through increased commitment and longer work hours (Swanberg et al., 2005). On the other hand, employers have expressed reservations about flexible work arrangements in that employees may take advantage of such arrangements, be more disconnected if they work outside the office, and that such offerings will be associated with increased costs to their organization. Galinsky, Sakai, and Wigton (2011) attempted to address the inconsistencies with reported findings by pointing out that most employees with access to flexible work policies do not abuse them, but rather use them conservatively, and still score higher on job satisfaction and retention. Lastly, some suggest organizations may worry about offering flexible work arrangements in fear of attracting candidates with imposing life demands that would distract them from work tasks, such as having a high level of family responsibilities to tend to. However, past research has shown that employees who were classified as most in need of flexible policies were not more likely to work for employers who have such policies in place (Halpern, 2005), but having such policies in place did present positive outcomes. More specifically, employees with increased access to flexible arrangements reported increased commitment and lowered stress symptoms, indirectly lowering organizational costs.

In sum, research suggests that if implemented correctly, the benefits of flexibility outweigh potential costs or concerns, and that flexibility has the potential to benefit employees and organizations through a variety of positive effects, including employee health.

Thus, building upon initial research and following the need for a better understanding of the relationship between schedule and location flexibility with employee health, the present study sought to identify how such perceptions may influence employee health outcomes through health behaviors. Furthermore, as researchers argue that different types of flexibility (e.g., schedule or location) may exhibit different effects, and have called for studies that examine the comparative effects of multiple components of flexibility (Casey & Grzywacz, 2008), the current study investigated the relationships of schedule and location flexibility to health separately.

Research Question 1: Which presents a stronger relationship with health: flexibility in schedule or location?

The Introduction next describes the specific aspects of health that were expected to be related to flexibility. This includes health behaviors or increased physical activity and sleep, and decreased risk behaviors of drinking alcohol, smoking cigarettes, or consuming caffeine. as well as health outcomes of increased subjective health, lowered BMI, increased role functioning, and lower reported burnout, each described below.

CHAPTER FOUR

FLEXIBILITY AND HEALTH BEHAVIORS

Researchers have emphasized the importance of health behaviors such as diet and exercise in preventing obesity and health issues, and the important influence policies and environments can have in helping employees shape their behavior (Tabak, Hipp, Marx, Young, & Brownson, 2015). Although it is hypothesized to be an important influence, the relationship between flexibility and employee health behaviors has still been left largely unexplored (Allen et al., 2015; Tabak et al., 2015). Flexibility in scheduling may increase health behaviors, as employees are better able to arrange their schedules to balance work and health activities in a way that works for them. Additionally, flexibility in work location has been argued to be a potential positive influence on employee health behaviors, such that employees may have more time and access to engage in healthy behaviors such as sleeping, exercising, and preparing healthy meals, perhaps by working in a more convenient location. Employees who are better able to shape their work schedule and environment can also better cope with demands (e.g., work hours) and work around avoidable stressors at work, thus having less negative health effects and more positive health indicators (Almeida & Davis, 2011).

In the present study, measures of health behaviors, including exercise, sleep and lower instances of risk behaviors (i.e., alcohol consumption, cigarette use, and caffeine intake), were expected to be positively influenced by increased levels of flexibility. Such behaviors were then expected to positively influence health outcomes, including lower levels of burnout and BMI, and more positive ratings of overall subjective health and role

functioning. A description of each health behavior and related research findings are summarized below, followed by a discussion of the health outcomes of interest.

Physical Activity

Physical activity is a crucial behavior in promoting health (Moen et al., 2011), but may be impaired by working conditions. As work hours become more sedentary, and long commutes present increased periods of sedentary behavior, finding additional time for physical activity becomes increasingly important. Researchers have noted increased risks for diseases such as diabetes, obesity, and cardiovascular disease arising from employees spending many hours sitting still (Thorp, Owen, Neuhaus, & Dunstain, 2011). Exercising appears to be something employees are very interested in doing, as 89% of employees in a national sample reported interest in an on-site exercise program at work (Kruger, Yore, Bauer, & Kohl, 2007), yet may often be skipped as work and home responsibilities take over (Nomaguchi & Bianchi, 2004).

Flexibility in work location and schedule may help employees create or arrange the time to exercise more easily. For instance, Allen and colleagues (2015) argued that employees who telecommute may have more time (often through a lowered commute distance and/or time) to engage in physical activity, supported by findings of Hoehner, Barlow, Allen, and Schootman (2012), who found a shorter commuting distance to be associated with higher levels of physical activity and increased cardiorespiratory fitness levels. Past research has also shown that employees who reported using flextime engaged in more exercise, and that flexibility at work was associated with increased usage of exercise facilities onsite (Tabak et al., 2015). Grzywacz et al. (2007) also found higher

ratings of perceived flexibility to meet personal commitments to be associated with more frequent reports of physical activity in the past week. Moen et al. (2013) found employees working in a results-only work environment (i.e., an environment in which an employees' performance is based solely on the products of their work, leaving them the latitude to work where, when, and how works best for them) to have positive relationships with health behaviors. More specifically, results showed that employees with control over their work time reported exercising more frequently.

Following these findings, it was proposed that employees who report higher levels of flexibility would engage in more physical activity and exercise. Moreover, as exercise is commonly cited as a contributor to positive health indicators, increased physical activity was then expected to be related to improved health outcomes. Through examining these relationships, the study helped to answer the call from prior researchers for future studies to explore connections between flexibility, physical activity, and health outcomes (Allen et al., 2015).

Sleep

Sleep is an important behavior in obtaining health and wellness that may be affected by work demands, most often in the form of work hours and scheduling. Schomann and colleagues (2006) found employees with undesirable work schedules, such as with situations of long hours and little rest times between shifts, reported a higher frequency of sleep problems. Additionally, Hooff et al. (2006) found increased interference between work and home to be associated with more sleep complaints. Lack of sleep stemming from long work hours has also been found to contribute to increased

fatigue and lowered performance and safe working practices (Lemke, Apostolopoulos, Hege, Sonmez, & Wideman, 2016). However, sleep hygiene may be positively influenced by flexibility in allowing employees to better manage their schedules and rest times. Wey and colleagues (2016) discuss individual differences in sleep patterns, phases, and preferences, citing that organizations should consider such differences when looking to promote the health and well-being of their employees. Offering employees flexible work arrangements that allow for them to organize their sleep phase and duration in the way that works best for them has been offered as a potential beneficial solution to help improve sleep quality (Wey, Garefelt, Fischer, Moreno, & Lowden, 2016).

Moen, Kelly, Tranby, and Huang (2011) found that employees who were a part of a results only work environment with higher schedule control reported almost an extra hour of sleep on work nights. Grzywacz and colleagues (2007) similarly found that as participants' perceptions of having the flexibility they needed to meet work, family, and personal commitments increased over time, so did participants' reported hours of sleep. Additionally, research has shown positive effects from supervisor support, in that employees with managers trained in showing sensitivity for life demands also reported better sleep quality (Kossek & Hammer, 2008).

Building upon these findings, it was hypothesized that employees who report and perceive higher levels of schedule and location flexibility would report a higher frequency of getting adequate sleep. Further, sleep quality was expected to predict health outcomes, as sleep is an important precursor to health indicators (e.g., burnout, well-being) (Moen et al., 2011), and poor sleep hygiene has been linked to negative health

factors such as an increased risk for chronic diseases (Buxton & Marcelli 2010; Maume et al. 2009).

Risk Behaviors

Engaging in risk behaviors such as excessive alcohol use or smoking cigarettes negatively effects health and may lead to an increased risk for chronic diseases. Flexibility at work, however, may lessen participation in risk behaviors. For example, a recent intervention in which an organization implemented a results only work environment was associated with smoking less and an increased likelihood in quitting smoking, as well as fewer instances of excessive drinking (Moen et al., 2013). On the contrary, employees with undesirable work schedules (e.g., long weekly hours, little rest time between shifts, disturbances to sleep times) were found to engage in more health risk behaviors and smoke cigarettes more often. (Schomann et al., 2006).

The current study hypothesized that flexible work arrangements would predict lower instances of health risk behaviors, classified as the frequency of cigarette use, drinking alcoholic beverages, and caffeine intake. Additionally, as the use of cigarettes and high levels of alcohol and caffeine are known to be harmful to health, lower instances of risk behaviors were then expected to be associated with more positive health outcomes, such as improved reports of subjective overall health and lower reported burnout.

In sum, following documented conceptual and empirical linkages, higher perceptions of schedule and location flexibility were hypothesized to positively influence each of the health behaviors discussed above (i.e., sleep, physical activity, and lowered

risk behaviors) over time. Furthermore, in an effort to best guide future research and organizational initiatives, research questions are proposed to investigate which health behaviors are most related to flexible work arrangements.

Hypothesis 1. Perceptions of flexibility (schedule and location) at T1 will be positively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Research Question 2: Which health behavior (physical activity, sleep, and lowered risk behaviors) is most strongly related to flexibility in schedule and location?

As discussed above, each health behavior is then expected to influence the health outcomes of reported burnout, subjective health ratings, BMI, and role functioning, each described below.

CHAPTER FIVE

FLEXIBILITY AND HEALTH OUTCOMES

As organizations become increasingly attuned to their healthcare costs and the benefits of increasing the health and wellness of their workers, flexible work arrangements have become a relevant topic of investigation. Because flexible work arrangements can serve as an effective resource that provides simultaneous benefits for both employees and the organization, they have been referenced as a smart business decision (Halpern, 2005) that organizations are encouraged to adopt.

The issue then, is that research on flexibility and employee health outcomes is still underdeveloped (Grzywacz et al., 2007). Researchers have called for more attention towards designing healthy work arrangements, and further examination of the connection between flexibility and health (Allen et al., 2015; Parker, 2014). Following these calls to action, and acknowledging that there does not yet appear to have been a study that has addressed the collection of variables proposed here in a comprehensive model, the current study aimed to offer unique and relevant contributions in examining the health outcomes of burnout, role functioning, subjective health ratings, and BMI scores in a full model. In order to introduce these relationships in more detail, each of the health outcomes are described below.

Burnout

Broadly defined, burnout refers to a state of being emotionally exhausted, detached, and ineffective (Maslach, 1982). Burnout can also refer to feelings of physical fatigue and cognitive weariness, or trouble thinking clearly (Shirom & Melamed, 2006).

It is in the best interest of organizations to help their employees avoid such experiences, as increased levels of burnout have been linked to a multitude of negative organizational outcomes, such as impaired performance, safety, and increased absenteeism (Nahrgang, Morgeson, & Hofmann, 2011; Parker & Kulik, 1995). Burnout stems from a high level of demands, but may be improved through flexible work arrangements. Flexibility can equip employees with the resource to control and reduce exposure to environmental stressors, and the latitude to comprise ways to better respond to stressors, such as working hours that fit best for them. Past research supports such relationships, as Grzywacz et al. (2008) found employees engaged in a flexible work arrangement (i.e., flextime or compressed workweek) reported lower levels of burnout. Telecommuting status has also been associated with lower levels of work exhaustion, a core component of burnout, (Sardeshmukh, Sharma, & Golden, 2012), as has a measured increase in the extent of telecommuting (Gajendran & Harrison, 2007).

The association between flexibility and employee health was also expected to be partially mediated by health behaviors. Health behaviors such as sleep and indicators such as stress have been shown to consistently predict burnout (Peiro, Gonzalez-Roma, Tordera, & Manas, 2001; Soderstrom, Jeding, Ekstedt, Perski, & Akerstedt, 2012). Almer and Kaplan (2002) reported that accountants utilizing flexible work arrangements, in comparison to those in standard arrangements, reported lower levels of stressors and reported burnout symptoms, along with higher satisfaction and lower turnover intentions. Building upon these previously documented connections, flexibility in scheduling and

work locations were expected to predict lower reports of burnout, and such relationships were expected to be partially mediated through health behaviors.

Subjective Health

In addition to more specific health indicators, flexibility may influence reports of more general, subjective health, such as feelings of being in 'excellent' versus 'poor' health. Past research has demonstrated associations between flexibility and perceptions of health. When comparing employees with high access to flexibility to employees with moderate or limited access, Galinsky and colleagues (2011) found a difference in prevalence of high ratings of self-reported health. More specifically, 39% of employees with high flexibility rated themselves to be in excellent health, yet this rating only emerged for 29% of employees with moderate flexibility, and for 20% of employees with low flexibility. Wilson et al. (2004) found similar results in a study focused on identifying characteristics of a health work organization, in that when measuring flexible work arrangements, there was a strong relationship to employees' subjective overall health ratings. Subjective health has also been found to be influenced by supervisor support for flexibility, as Kossek and Hammer (2008) reported employees with managers trained in sensitivity and understanding for work-life balance reported increased perceptions of their overall health.

Building upon the results described above, flexibility in schedule and location was expected to be associated with more positive reports of perceived health. In addition, as the health behaviors included in the present study were expected to be directly related to

health reports, the relationship between flexibility and demands to perceived health was expected to be partially mediated by employee health behaviors.

Body Mass

Body Mass Index (BMI) is a ratio comprised of height and weight used for the categorization of a normal, underweight, or obese body type. A normal BMI is ideal and indicates a healthy weight for a person's height, while higher ranges may mean an increased risk for heart disease, high blood pressure, and diabetes (UniCare, 2008). Organizations are concerned with employees' body mass in recognizing that unhealthy levels may lead to increased costs and lower productivity (Tabak et al., 2015).

While past research documenting relationships linking BMI and flexibility is scarce, obesity classifications can certainly be influenced by work schedules and flexible work arrangements. A meta-analysis by Bonham, Bonnell, and Huggins (2016) found that employees engaged in varying schedules of shift work showed higher levels of obesity compared to those with a consistent day schedule, with differences likely due to meal timing and dietary choices. Furthermore, qualitative data from Nobrega et al. (2016) indicated that non-standard shift work and inflexible schedules contributed to the health and weight of a sample of low income workers, in that their schedules prevented them from engaging in public recommendations of dietary and exercise practices.

Weight and body mass are also heavily influenced by health behaviors such as diet and exercise (Calle, Rodriquez, Walker-Thurmond, & Thun, 2003; Flegal, Kit, Orpana, & Graubard, 2013), and such pathways can be influenced by organization policies. Meta-analytic findings provide support for workplace interventions targeted at

improving employees' diet and physical activity levels to reduce body weight and body fat percentage (Verweij, Coffeng, van Mechelen, & Proper, 2010).

Following this logic, higher levels of flexibility were hypothesized to be related to a lower BMI. Furthermore, these relationships were expected to be partially mediated by health behaviors.

Role Functioning

In the context of this study, role functioning is described as the ability to successfully complete work tasks without any interference from health issues. If an employee is able to attend work and complete all of the types and amount of work expected of them, they would be classified as high role functioning. However, if the employee's health prevents them from going to work or completing any work tasks in type or amount, they would be considered to have lower role functioning.

An employee's engagement in health behaviors, demands they face, and flexible work arrangements may affect their ability to do their job. Organizations should pay attention to flexible work options to help improve employee's role functioning. There are a number of ways flexibility may help to positively influence role functioning, and past research in the form of meta-analytic results show telecommuters to be more likely to have higher scores on supervisor rated task performance in comparison to non-telecommuters (Gajendran & Harrison, 2007). Moreover, continuing to pull from the suggestions of Lemke et al. (2016), adjusting routes, schedules, and pay incentives to allow for as much flexibility as possible in hours of driving may serve as a useful solution to allow for drivers to take measures to improve their sleep quality by aligning breaks

with their preferred and natural circadian rhythm, and thus improving role functioning. Such solutions can also help to encourage and allow for engagement in other, important health behaviors.

Following these arguments, flexibility was expected to positively influence role functioning. Furthermore, these relationships were expected to work through health behaviors, such as sleep.

In conclusion, higher levels of flexibility in scheduling and location were expected to be positively associated with the health outcomes of burnout, subjective health, BMI, and role functioning. These relationships were then expected to be partially mediated by health behaviors including sleep, exercise, and less engagement in risk behaviors. In addition to the earlier proposed hypotheses, to help add more clarity to the literature and to organizations, the present study also explored research questions to determine which health outcomes are most strongly related to flexibility and to health behaviors, labeled below.

Hypothesis 2. Perceptions of flexibility (schedule and location) at T1 will be positively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2.

Hypothesis 3. Perceptions of flexibility (schedule and location) at T1 will be positively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through improved health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Research Question 3: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to flexibility in schedule and location?

Research Question 4: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to which health behavior (physical activity, sleep, and lowered risk behaviors)?

CHAPTER SIX

DEMANDS

Demands by definition require time, effort, and resources (Bakker & Demerouti, 2007). In the context of the present study, demands of work hours and commute time were expected to detract from an employee's ability to engage in health behaviors and to negatively influence health outcomes. Past research provides some support for these connections. For instance, both work time and commute time have been classified as some of the main contributors that take away from sleep duration in a large national sample (Basner et al., 2007), a variable which the authors discuss has been linked to serious health effects including BMI, lower self-reported health, and even higher levels of blood pressure and mortality (Basner et al., 2007).

The present study also proposed that flexibility in schedule and location can act as a resource, helping to buffer the negative relationships with demands. Flexibility may allow employees to work longer hours before they experience negative effects, in that they may be able to work at times that are best for them (i.e., schedule flexibility), and have the latitude to find pathways to handle broader life demands and engage in health behaviors (e.g., exercise). Flexibility may also help buffer the negative associations with having a longer average commute time in offering employees solutions that can help them to work at more convenient times or locations, such as opting to occasionally work in different locations that provide an easier, more convenient commute. Additionally, in a similar fashion to work hours, flexibility may allow them to better organize ways to

handle life demands while spending additional time commuting to and from work each day, such as taking a midday break to head to a gym class close to work.

Work Hours

Work hours have long been classified as a demand with negative effects. In the present study, it was expected that increased work hours would be negatively related to health behaviors and health outcomes. Past research by Luther and colleagues (2016) found that medical clinicians who worked overtime reported decreased health outcomes of higher burnout and lower role functioning in the form of lower quality patient care, as well as increased work-life conflict and lower job satisfaction. Further, a recent study found that for nurses in Taiwan who suffered from chronic insomnia, those who worked over 40 hours a week were more likely to be injured on the job (Lo, Chiou, Huang & Chien, 2016), showing how work hours are related to both health behaviors (i.e., sleep) and health outcomes (i.e., role functioning). Schomann, Giebel, and Nachreiner (2006) also found evidence connecting work hours and health behaviors to health symptoms, in that employees with long working hours, little rest times between shifts, and hours that disturb nighttime sleep reported increased stomach pains.

An employee's BMI may also be negatively impacted by demands. One example is with truck drivers, who legally may work up to 14 hours a day, and due to pressure in the industry and tight time schedules for deliveries may even push more. A dissertation study by Hege (2015) reports that these long-haul truck drivers report much higher instances of obesity compared to the national average, and that the long work hours may be a contributing factor. However, there are also contrary findings, as a meta-analysis by

Van der Hulst (2003) revealed inconclusive results for the relationship between long work hours and BMI.

Past research also shows inconsistent results between hours worked and other health indicators. For example, contrary to previous findings and the authors' hypotheses, work hours were not significantly associated with increased substance use (Bono, Kendler, & Barnes, 2016). Furthermore, a critical review of the literature on long work hours by Ganster, Rosen, and Fisher (2016) report that while they are certainly related to physical, mental, and well-being health outcomes, such as heart disease and depression, effect sizes are small, and there may be many other factors at play. These researchers have called for additional research, specifically longitudinal studies that consider gender, age, and other factors that may influence relationships, and testing for relevant moderator effects. Fortunately, the current study is well equipped to address many of the authors' recommendations in examining work hours to employee health in a longitudinal design, controlling for relevant demographic factors, and examining its' interaction with flexibility perceptions.

When considering the interaction between work hours and flexibility, flexibility may buffer the negative relationships between work hours and health through allowing employees to complete work when and where is best for them, to have more control over their distribution of work hours, to organize their work hours to lessen exposure to stressors, and to have the latitude to find ways to still engage in health behaviors when having less free time.

A study by Lemke and colleagues (2016) helps to illustrate the connection between work hours, health behaviors, and health outcomes, and the hypothesized positive effect of flexibility. The authors found that in a sample of U.S. truck drivers, lower sleep quality was associated with reports of trouble with concentration and inability to conduct their work safely. Furthermore, a lack of sleep quality stemmed from an increase in demands in the form of working more hours than the set daily limit. The authors suggested that decreased sleep quality may stem from atypical work schedules that conflict with natural circadian rhythms, and that for an industry with high demands, a focus on employee health and well-being is important, and organizations should work to encourage and enable health behaviors such as physical activity. A focus on flexibility could also help to alleviate some health issues by offering drivers more flexibility in schedule to align their driving times and shifts with their circadian rhythm or other life demands.

Though again, there are mixed results, and flexibility has not always shown to be a successful in this manner. For example, in a study by Allen et al. (2013), no significant relationship was found for the interaction between working hours and telecommuting on work-family conflict. Therefore, the present study sought to advance the literature and to help clarify relationships between work hours, schedule and location flexibility, and health by examining the relationships proposed below. Hypothesized relationships are also displayed in Figure 1.

Hypothesis 4. Work hours at T1 will be negatively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 5. Work hours at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2.

Hypothesis 6. Work hours at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 7. Perceptions of flexibility (schedule and location) at T1 will moderate the negative relationship between work hours at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high flexibility will buffer the negative relationship.

Hypothesis 8. Perceptions of flexibility (schedule and location) at T1 will moderate the mediated relationship between work hours at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high flexibility will buffer the negative relationship.

Commute Time

Commute time is a time consuming and sedentary behavior that can negatively affect health. Those with a long commute are more likely to spend more time sitting and report lower indices of self-rated health (Badland, Milner, Roberts, & Giles-Corti, 2016). Past research has also shown longer commute distances to be related to clinically measured variables in a wide sample of Texas residents, including lowered physical

activity and cardiorespiratory health, as well as increased measurements of BMI, waist size, and blood pressure (Hoehner, Barlow, Allen, & Schootman, 2012).

Commuting in traffic is also a barrier to productivity at work, as time devoted to driving or sitting in traffic takes away from other, more meaningful tasks. In fact, the center for Global Workplace Analytics estimated in 2015 that traffic jams might amount to as much as $78 billion dollars lost in productivity in the U.S. each year. Past research has shown that for female employees in an Australian sample, a longer commute time was related to increased absenteeism (VandenHeuvel & Wooden, 1995), while other researchers have hypothesized that if commuting distance were diminished, absenteeism would drop as much as 20% (Van Ommeren & Gutierrez-Puigamau, 2011).

Important to the present study, negative effects from a higher average commute time may be lessened by access to flexible work arrangements. An intervention study in a Dutch financial firm by Nihp et al., (2016) found that for the 361 participants in the intervention group introduced to a new way of working with temporal and spatial flexibility, there was reduced commute time, and a slight improvement in reports of fatigue. Interestingly, the authors also found the intervention group to report a decrease in self-reported health, though they were unclear if it was linked to flexibility or possible confounding demands or effects (Nihp et al., 2016). Results such as this further emphasize the need for additional research in this area to help clarify relationships and pathways. A study by Winett, Neale, and Williams (1982) also found in a quasi-experiment that those who adopted a flextime system, allowing them to alter their schedule by about an hour were found to have reduced commute time in one

organization, and to have an easier time engaging in other activities outside of work tasks, such as chores.

While many may consider flexibility a direct link to lowering commute time (e.g., when employees work at home), there are many other ways which flexibility and commute may interact to influence health. Moreover, the link from flexibility to commute length is not always a clear pathway. In fact, some data suggests that those who telecommute may end up traveling an average of 45 more miles per day, perhaps to complete necessary errands that would normally be worked into stops along a work commute (Zhu & Mason, 2014). As Allen et al. (2015) describe, there is not a strong body of evidence to support the intuitive link that flexible work arrangements or even telecommuting reduces the number of miles traveled per day, and research to date on this topic is inconclusive. Further, while longer commutes have been shown to negatively influence health, time is not the only factor which may present stress and barriers in a commute that could be lessened by flexible work options. Time of day, route taken, and other environmental stressors may play a role as well, and there is reason to suggest that even those with short commutes may benefit from flexibility (Morrow, 2010). Therefore, in order to capture how flexibility may help to lessen negative relationships between the demand of commuting with health, a model of moderated relationships was proposed.

When considering the interaction between commute and flexibility, employees with flexibility are more likely to have the power to choose their commute through determining their work hours (and therefore travel times) and location (and therefore their travel route). For example, employees may have the ability to work in a satellite office or

alternate location that is more convenient and can better enable them to engage in health behaviors. Employees working non-traditional hours (such as 7am-3pm rather than 9am-5pm) may be able to avoid stressful periods of heavy traffic and rush hours that provide stress or disrupt their preferred schedule. Lastly, flexibility may also enable employees to find creative times that fit with their daily schedule (e.g., taking an extended lunch to attend a gym near the office). A dissertation by Morrow (2010) also described how commute time negatively impacts health outcomes through commuting stress, and furthermore, that frequently using flexible work arrangements may be a significant buffer to commute stress and thus, negative effects on health.

Therefore, the current study sought to add to this underdeveloped area of literature and examine links in how a higher average commute time may be negatively related to employee health behaviors and health outcomes, and furthermore, how flexible work arrangements may buffer such relationships. Proposed relationships are listed below and are also displayed as part of the comprehensive model in Figure 1.

Hypothesis 9. Commute time at T1 will be negatively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 10. Commute time at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2.

Hypothesis 11. Commute time at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 12. Perceptions of flexibility (schedule and location) at T1 will moderate the negative relationship between commute time at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high flexibility will buffer the negative relationship.

Hypothesis 13. Perceptions of flexibility (schedule and location) at T1 will moderate the mediated relationship between commute time at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high flexibility will buffer the negative relationship.

In addition, in order to help determine which health behavior and outcomes are most related to demands, research questions were proposed and are displayed below.

Research Question 5: Which presents a stronger relationship with health: work hours or commute time?

Research Question 6: Which health behavior (physical activity, sleep, and lowered risk behaviors) is most strongly related to demands of work hours and commute time?

Research Question 7: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to demands of work hours and commute time?

CHAPTER SEVEN

FAMILY SUPPORTIVE SUPERVISOR BEHAVIORS

Beyond the explicit, formal arrangements organizations make with employees, there are implicit agreements and encouragements or discouragements that may influence how flexibility affects health behaviors and outcomes. Most of these indirect influences come from the behavior of an employee's supervisor. Even with an organization-wide program in place, supervisors may determine the extent to which employees can utilize benefits (Butler et al., 2009), and an employee's comfort or ability in using flexible work arrangements may be influenced indirectly through the supervisor's tone and overall support.

Overall supervisor support has been classified as an important resource to employees in itself, and has been linked to more positive work-family experiences (Kossek, Pichler, Bodner, & Hammer, 2011), as well as to self-reported health (De Lange et al., 2003). In addition, research has found that the culture surrounding more formal policies may influence their effectiveness. For instance, a dissertation by Vega (2015) reported that when examining employees' decisions to enroll in a flexible work arrangement, supervisor support for flexibility was by far the strongest predictor of an employee's likelihood to use an offered arrangement. Furthermore, results from a training program to help retail managers display sensitivity and understanding in relation to employee issues in work-life balance helped to increase overall health and sleep quality, lower blood pressure, and contribute to higher job satisfaction (Kossek & Hammer, 2008).

Friedman and Johnson (1997) also suggest that family-friendly policies presented within a culture that values the well-being of its employees are more effective. Support for this proposition was obtained in a recent study from Rofcanin, Heras, and Bakker (2016) which found that family supportive supervisor behaviors positively influenced work performance through employee work engagement, and this relationship was moderated by a positive family supportive organizational culture.

Following these findings and rationale, family supervisor supportive behaviors were expected to increase the positive relationship between flexibility and health behaviors. Additionally, following the argument for supervisor support as a positive resource, I hypothesized that supervisor supportive behaviors would buffer the negative relationship between demands of work hours and commute time to health behaviors. Proposed relationships are listed below and are also displayed as part of the comprehensive model in Figure 1.

Hypothesis 14. Family Supportive Supervisor Behaviors at T1 will moderate the positive relationship between perceptions of flexibility (schedule and location) at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high support will enhance the positive relationship.

Hypothesis 15. Family Supportive Supervisor Behaviors at T1 will moderate the mediated relationship between perceptions of flexibility (schedule and location) at T1 and improved health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through improved health behaviors

(physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high support will enhance the positive relationship.

Hypothesis 16. Family Supportive Supervisor Behaviors at T1 will moderate the negative relationship between work hours at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high support will buffer the negative relationship.

Hypothesis 17. Family Supportive Supervisor Behaviors at T1 will moderate the mediated relationship between work hours at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high support will buffer the negative relationship.

Hypothesis 18. Family Supportive Supervisor Behaviors at T1 will moderate the negative relationship between commute time at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high support will buffer the negative relationship.

Hypothesis 19. Family Supportive Supervisor Behaviors at T1 will moderate the mediated relationship between commute time at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors at T2 in a mediated moderation model in which high support will buffer the negative relationship.

CHAPTER EIGHT

SUMMARY OF HYPOTHESES

In order to better understand the longitudinal relationships between schedule and location flexibility on health outcomes, partially mediated by health behaviors, the following hypotheses were proposed. A summary figure of all proposed relationships can also be found in Figure 1.

Hypothesis 1. Perceptions of flexibility (schedule and location) at T1 will be positively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 2. Perceptions of flexibility (schedule and location) at T1 will be positively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2.

Hypothesis 3. Perceptions of flexibility (schedule and location) at T1 will be positively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through improved health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 4. Work hours at T1 will be negatively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 5. Work hours at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2.

Hypothesis 6. Work hours at T1 will be negatively related to health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2

through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

Hypothesis 7. Perceptions of flexibility (schedule and location) at T1 will moderate the negative relationship between work hours at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high flexibility will buffer the negative relationship.

Hypothesis 8. Perceptions of flexibility (schedule and location) at T1 will moderate the mediated relationship between work hours at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high flexibility will buffer the negative relationship.

Hypothesis 9. Commute time at T1 will be negatively related to health behaviors (physical activity, sleep, and lowered risk behaviors) at T2.

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Hypothesis 12. Perceptions of flexibility (schedule and location) at T1 will moderate the negative relationship between commute time at T1 and health

behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high flexibility will buffer the negative relationship.

Hypothesis 13. Perceptions of flexibility (schedule and location) at T1 will moderate the mediated relationship between commute time at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high flexibility will buffer the negative relationship.

Hypothesis 14. Family Supportive Supervisor Behaviors at T1 will moderate the positive relationship between perceptions of flexibility (schedule and location) at T1 and health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in which high support will enhance the positive relationship.

Hypothesis 15. Family Supportive Supervisor Behaviors at T1 will moderate the mediated relationship between perceptions of flexibility (schedule and location) at T1 and improved health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through improved health behaviors (physical activity, sleep, and lowered risk behaviors) at T2 in a mediated moderation model in which high support will enhance the positive relationship.

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Hypothesis 19. Family Supportive Supervisor Behaviors at T1 will moderate the mediated relationship between commute time at T1 and decreased health outcomes (subjective health, lowered BMI, role functioning, and lowered burnout) at T2 through decreased health behaviors at T2 in a mediated moderation model in which high support will buffer the negative relationship.

Research Question 1: Which presents a stronger relationship with health: flexibility in schedule or location?

Research Question 2: Which health behavior (physical activity, sleep, and lowered risk behaviors) is most strongly related to flexibility in schedule and location?

Research Question 3: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to flexibility in schedule and location?

Research Question 4: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to which health behavior (physical activity, sleep, and lowered risk behaviors)?

Research Question 5: Which presents a stronger relationship with health: work hours or commute time?

Research Question 6: Which health behavior (physical activity, sleep, and lowered risk behaviors) is most strongly related to demands of work hours and commute time?

Research Question 7: Which health outcome (subjective health, lowered BMI, role functioning, and lowered burnout) is most strongly related to demands of work hours and commute time?

CHAPTER NINE

METHOD

Participants and Procedure

This study used an archival data set that was collected through Amazon's Mechanical-Turk (MTurk), an online tool for data collection that compensates participants for completing survey hits. This process has shown to be a quick and efficient process for gathering quality data from large, diverse samples (Buhrmester, Kwang & Gosling, 2011). Most importantly, MTurk has also shown to provide reliable and valid data for a variety of different constructs in past research, such as personality variables (Buhrmester et al., 2011; Cheung, Burns, Sinclair & Sliter, 2016; Horton et al., 2011). Furthermore, by using MTurk, there was an opportunity to increase the generalizability of the findings by examining responses from a sample representing different genders, family situations, socioeconomic classes, health ratings, and from a range of industries and organizations with various flexible work arrangements. As discussed above, this approach works to address the limitations of past research, which has often analyzed data from a single organization known for their support of flexibility, a method which has been projected to have limited generalizability (Grzywacz et al., 2008).

Data were collected at two separate time points, separated by a period of roughly three months. This longitudinal approach allowed for analyses based on the relationships between flexibility on health behaviors and health outcomes over time. This time period strikes a balance between leaving enough time to capture relationships over time, while

avoiding excessive time lags in which there may be major changes in health, life events, aging, or job changes that could affect results. Furthermore, while more distal health indicators may take much longer to appear, changes in relation to health behaviors were expected to be more immediate. This approach helps to answer the call from researchers who have noted a need for longitudinal studies as a way to help identify mediating patterns (Hughes & Parkes, 2007).

In order to be included in the study, participants had to meet certain qualifiers. Participants who met the qualifiers and completed the survey received a payment of $4.00 credited to their M-Turk account for each time point they submitted a valid response. All participants indicated they were over 18 years of age, located in the United States, and had a full-time job (other than MTurk) for 30 or more hours a week. Participants also had to have an approval rate of at least 90% based on past participation in MTurk studies. An approval rate is based off the participant's ratio of accepted responses and signifies that their past responses were accepted as valid at least 90% of the time.

When beginning the survey, participants agreed they were able and willing to complete each survey after reading an informative statement showcasing a description of the study. As participants went through the survey, they were ask to respond to embedded attention check items. These items were included in order to ensure that participants were responding thoughtfully, and as a means to improve data quality. An example attention check item is "If you are paying attention, please respond 'somewhat disagree'". Participants who did not respond correctly to an attention check item were asked to

restart the survey from the beginning. If the participant did not choose to retake the survey, they were asked to stop participation and were not compensated for their responses. If the participant chose to restart the survey but responded incorrectly to an attention check item on their second attempt, they were asked to exit the survey and were not compensated for their responses. Data from participants who failed an attention check and did not retake the survey, or who failed an attention check in their second attempt, were not included in any of the proposed analyses.

This procedure resulted in 686 valid and matched responses. At Time 1, data were collected from 1,864 participants. Five hundred and nine participants incorrectly answered an attention check item, 193 then chose to retake the survey, resulting in a sample of 1,548 valid responses at Time 1. At Time 2, data were collected from 752 participants. One hundred and twelve participants incorrectly answered an attention check item, of which 46 took the opportunity to retake the survey, resulting in a sample of 686 valid responses at Time 2, all of which were matched with Time 1 data. Further examination of the data found that 216 participants did not report working full time and/or 30 or more hours a week, and thus they were deleted from the sample, resulting in a total *N* of 470 for analyses of participants who worked full time and had responded to both the Time 1 and Time 2 surveys.

When comparing the final sample to those who responded to the Time 1 survey but not Time 2, the demographics were comparable to that of the final sample. This population was 53% female, had an average age of 32 years, and the majority (37%) had completed a bachelor's degree (20% had an associates degree, 30% completed high

school, 11% had a masters degree, and 2% had advanced degrees such as a Ph.D.). Most of the participants had one job (76%), while 21% had two jobs, and 3% reported having three or more jobs. When examining the mean differences between participants who did not complete the second survey and those included in the final sample, results showed that participants in the two groups did not differ significantly on any of the variables measured at Time 1, including schedule and location flexibility, commute time, work hours, and FSSB (*p*'s > .05). Demographics for the final sample are described below.

Demographics

Of the 470 participants included in analyses, 46% were male and 54% female. Participants' ranged from 20 years to 67 years of age, with an average age of 36. Most of the sample (43%) had completed a bachelor's degree. The rest reported having a high school diploma (23%), an associate's degree (16%), or a master's degree (15%). Very few reported having less than a high school diploma (0.2%) or having a doctorate degree (3%). Seventy-six percent of the sample reported working one job, and 21% reported working two jobs, while the remaining 3% reported working three jobs. The most frequently reported occupation was office and administrative support (12%), followed by education, training, and library (11%), business and financial operations (10%), and computer and mathematical occupations (10%). The other occupations were management (9%), sales related outcomes (8%), healthcare support (7%), food prep ad serving related (5%), arts, design, entertainment, sports, and media (5%), and health care practitioners and technical (4%). Smaller frequencies were seen for community and social services (3%), production (3%), transportation and material moving (2%), installation and

maintenance repair (2%), protective service (2%), architecture and engineering (2%), legal (2%), and life, physical, and social science (2%).

Measures

A summary of the measurement tool used for each variable is provided below. A full list of items for each measure can be found in Appendices A through F.

Flexibility was measured with four items modified from Allen (2001) and Hyland (2000). Two items referenced flexibility in scheduling (e.g., I have the freedom to change the times that I begin and end each workday due to my personal preferences/needs). The last two items referenced flexibility in location (e.g., I have the freedom to choose the location where I complete my work (e.g., home, office, etc.)). Responses were assessed on a scale from 1 (strongly disagree) to 7 (strongly agree). A full list of items can be found in Appendix A. Flexibility in schedule and location were analyzed separately in order to examine their individual and comparative relationships. Flexibility in schedule and location both displayed evidence of reliability, with Cronbach's alpha values of .83 and .96, respectively, and composite reliability (rho) values of .83 and .96. Confirmatory factor analyses provided support for schedule flexibility and location flexibility as two factors (X^2= 10.21, *df*=1, *p*<.01; *CFI*=.99; *RMSEA*=.14 [90% *CI:* (.07-.22)]; *SRMR*=.01), in comparison to when the four items were treated as a single factor (X^2= 131.637, *df*=2, *p*<.01; *CFI*=.92; *RMSEA*=.37 [90% *CI:* (.32-.43)]; *SRMR*=.07). Although the chi-square was significant, this outcome can be expected when using a large sample size (Bentler, & Bonnet, 1980).

Demands. ***Work hours*** were measured with one item developed for the present

study reading "How many hours do you currently work per week in your primary job?"

Commute time was measured through one item developed for the present study reading "Thinking about your primary job, about how long (in minutes) does it take you to get to work, from the time you leave your house to the time you arrive at your office/worksite?" Responses were collected in bucketed options of fifteen minute intervals (e.g., less than 15 minutes, 15-30 minutes, over 120 minutes).

Family Supportive Supervisor Behaviors were measured with four items from a Family Supportive Supervisor Behavior Short Form scale by Hammer, Kossek, Bodner and Crain (2013). Responses were collected on a scale from 1 (strongly disagree) to 7 (strongly agree). Each item represents a construct domain of emotional support, instrumental support, role modeling, and creative work-family management. An example item reads "Your supervisor makes you feel comfortable talking to him/her about your conflicts between work and non-work." A full list of items for measuring flexibility can be found in Appendix C. Testing of the scale has shown high reliability (α =.82), adequate model fit, and evidence of convergent and discriminate validity (Hammer et al., 2013). In the present study, FSSB showed a Cronbach's alpha value of .92 and composite reliability of .92. Confirmatory factor analysis of the items supported a one factor structure (X^2= 8.66, *df*=2, *p*=.01; *CFI*=1.0; *RMSEA*=.08 [90% *CI:* (.03-.15)]; *SRMR*=.01).

Health Behaviors were measured with items designed for the Oregon Nurse Retention Project by Sinclair and colleagues (2009). A full list of items used can be found in Appendix D.

Physical Activity was measured with one item capturing frequency "On how many days in a typical week did you engage in aerobic or physical activity, such as walking, jogging, or cycling?" Here, a higher score indicates a positive health behavior.

S*leep* was measured with one item reading "In a typical week, on how many days did you get adequate sleep?" Responses were collected on a scale from 0 to 7 days. Here, a higher score indicates a positive health behavior.

Risk Behaviors were measured with three items that captured the frequency of using alcohol, cigarettes, and caffeinated beverages. An example item is "On average, how many days per week did you drink alcohol? " Responses were collected on a scale from 0 to 7 days. Here, a lower score indicates a positive health behavior.

Health Outcomes. *Burnout* was measured through the 14-item Shirom-Melamed Burnout Measurement (SMBM) developed by Shirom and Melamed (2006). This scale is comprised of three subscales of physical fatigue (e.g., In the past 30 workdays, I feel physically drained), cognitive weariness (e.g., In the past 30 workdays, I feel I'm not thinking clearly), and emotional exhaustion (e.g., In the past 30 workdays, I feel I am not capable of investing emotionally in coworkers). Ratings were collected on a scale of 1 (never or almost never) to 7 (always or almost always). A full list of items can be found in Appendix E. Here, a lower score indicates a positive health outcome.

The SMBM is one of the most popular measures of burnout, and has shown reliabilities over .70 in groups of generalizable professionals, evidence of convergent validity with related variables such as job demands, and evidence for overall construct validity supported through confirmatory factor analyses (Shirom & Melamed, 2006). In

the present study, the SMBM showed a Cronbach's alpha value of .97 and composite reliability of .97. Confirmatory factor analyses provided support for burnout as a second order factor comprised of three correlated factors of physical fatigue, cognitive weariness, and emotional exhaustion (X^2= 417.61, *df*=74, *p*<.01; *CFI*=.96; *RMSEA*=.10 [90% *CI:* (.09-.11)]; *SRMR*=.04). Such fit indices were superior to those when burnout was treated as a single factor (X^2= 2781.07, *df*=77, *p*<.01; *CFI*=.69; *RMSEA*=.28 [90% *CI:* (.27-.28)]; *SRMR*=.09).

Subjective Health was captured through a single item from the Short-Form Health Survey by Stewart, Hays, and Ware (1988) reading "In general, would you say your health is…" with response options of "Poor", "Fair", "Good", "Very Good", or "Excellent". Here, a higher rating indicates a positive health outcome.

Role Functioning was captured through the two role functioning items on the Short-Form Health Survey by Stewart et al. (1988). The items read "Does your health keep you from working at a job, doing work around the house or going to school?" and "Have you been unable to do certain kinds or amounts of work, housework or schoolwork because of your health?". Responses options were "No", "Yes, for 3 months or less", and "Yes, for more than 3 months". Here, a lower frequency indicates a positive health outcome. This scale has shown reliability of 0.81 and evidence of convergent and construct validity to support these items as a sound and useful short measure (Stewart et al., 1988). In the present study, role functioning displayed a Cronbach's alpha value of .80.

Body Mass Index. Participants were asked to report their height (in feet and in inches), approximate weight (in pounds), and size of their waist (in inches.) From this data, a BMI score will be calculated by a) converting weight in pounds to weight in kilograms, b) converting height in inches to height in metrics, and c) dividing the person's weight in kilograms by height in meters. Here, a lower BMI indicates a positive health outcome.

Demographics. Participants were asked to indicate their gender (i.e., male, female) and age (in years). In relation to their employment, participants were asked to disclose the number of jobs they currently held, and their occupation for their primary job. In order to indicate their current occupation, participants chose from a list of 23 occupations. Examples include management, legal, and healthcare support.

CHAPTER TEN

RESULTS

Data Preparation

Data were entered into SPSS and examined for outliers. Scores of Mahalanobis distance were calculated for each participant and plotted in order to identify potential outliers, but no outliers were detected and all participants were retained. Next, because scores used to calculate BMI were entered manually by participants, responses were examined for accuracy. One participant was found to have reported an unrealistic waist size of 14, resulting in a BMI of 11, and thus their BMI score was deleted.

Descriptive Statistics

Moving forward with the sample of 470 participants with matched data at Time 1 and Time 2, descriptive statistics were calculated. The means, standard deviations, and bivariate correlations reported below are also displayed in Table 1. On a scale of 1 to 7, schedule flexibility displayed a mean of 3.51 (*SD* = 1.79). The mean for location flexibility was 2.67. (*SD* = 1.78). Only 19% of the sample selected "agree" or "strongly agree" for schedule flexibility items, and only 10% did so for location flexibility. In regards to demands, work hours averaged at 41.31 hours per week (*SD* = 5.0), ranging from 30 to 61 hours. Commute time displayed a mean of 2.18 (*SD* = 1.14) on a scale from 1 to 9, with the highest frequency for 15 to 30 minutes (39%) and less than 15 minutes (30%). FSSB displayed a mean of 4.95 (*SD* = 1.48) on a scale of 1 to 7.

For health behaviors, participants most often reported three days of exercise (20%), five days of adequate sleep (21%), zero days with alcohol (51%), zero days

smoking a cigarette (77%), and seven days a week drinking caffeine (52%). Physical activity averaged to 3.05 (*SD* = 2.09) and sleep displayed a mean of 4.54 (*SD* = 1.88). For risk behaviors, the means were 1.15 (*SD* = 1.76) for alcohol use, 1.29 (*SD* = 2.63) for cigarette use, and 4.89 (*SD* = 2.67) for caffeine use.

For health outcomes, subjective health displayed a mean of 2.78 (*SD* = .92) on a scale from 1 to 5. Most participants rated themselves in "good" health (44%). The average calculated BMI was 28.22 (*SD* = 7.83). According to the Center for Disease Control (2015), a BMI of 28 is considered overweight. A BMI within the range of 18.5 to 24.9 would be considered normal (i.e., healthy). The mean for role functioning was 2.88 (*SD* = .41) on a 3-point scale, with most all participants reporting no interferences with performing their duties (90%). Lastly, the mean for burnout was 3.04 (*SD* = 1.37) on a scale of 1 to 7.

Table 1 displays the correlations for the composite variables. Schedule and location flexibility displayed the strongest relationship (r =. 70, $p < .05$). Location flexibility was also correlated with work hours ($r = .16$, $p < .05$). Work hours and commute were also correlated with one another ($r = .11$, $p < .05$). Both schedule and location flexibility were correlated with FSSB, ($r = .24$, $p < .01$ and $r = .21$, $p < .01$, respectively). However, when correlated with health behaviors, schedule flexibility displayed only a low correlation with physical activity ($r = .09$, $p < .05$), and location flexibility displayed only a low, negative correlation with caffeine usage ($r = -.10$; $p < .05$). FSSB was correlated with sleep ($r = .17$, $p < .05$). In regards to demands, work hours was correlated positively with alcohol use ($r = .10$, $p < .05$), and commute time

with caffeine use (r = .12, p < .05). In regards to health outcomes, schedule flexibility (r = -.13, p < .01) and location flexibility (r = -.14, p < .01) were negatively related to burnout, as was FSSB (r = -.36, p < .01). Work hours was also positively correlated with role functioning (r = .13, p < .05).

The most frequent correlations were those observed between health behaviors and measured health outcomes. Physical activity (r =.29, p < .01), sleep (r = .30, p < .01), cigarette use (r = -.17, p < .01), and caffeine use (r = -.11, p < .05), were each correlated to subjective health ratings. BMI scores were negatively correlated with physical activity (r = -.20, p < .01) and sleep (r = -.10, p < .05), and positively correlated with caffeine use (r =.10, p < .05). Role functioning was significantly related to sleep (r = .27, p < .01). Lastly, burnout was negatively correlated with reports of physical activity (r = -.15, p < .01) and sleep (r = -.41, p < .01).

Each of the variables were also correlated with the controls of interest, including occupation, number of jobs, gender, age, and education level. Correlations were low (r < .18), with very few significant relationships. Thus, controls were not included in further analyses.

Analyses

The rest of the analyses were run using structural equation modeling in Mplus using maximum likelihood estimation. This approach was used in order to examine the multiple mediators and outcomes proposed simultaneously in a single model. Predictors of schedule flexibility, location flexibility, FSSB, burnout, and role functioning were classified as latent variables. The rest of the variables, including work hours, commute

time, physical activity, sleep, alcohol consumption, cigarette use, caffeine intake, BMI, and subjective health were classified as observed. The main model examined included direct pathways from flexibility and demands to health behaviors, flexibility and demands to health outcomes, and the mediated relationships from flexibility and demands to health outcomes through health behaviors. The model displayed indices of (X^2 = 1049.99, *df*=435, $p < .01$; *CFI* = .95; *RMSEA* = .05 [90% *CI:* (.05-.06)]; *SRMR* = .08). The model met or exceeded cut-off values of .90 for CFI, .06 for RMSEA, and .08 for SRMR recommended by past researchers, and no modifications were added (Marsh, Hau, and Wen, 2004). The significant chi-square value was not surprising nor an issue, as this outcome can be expected when using a large sample size (Bentler, & Bonnet, 1980).

Direct Effects

Health behaviors. To examine the direct effects of flexibility and demands to health behaviors, each health behavior was regressed onto the predictors together in a single model. Results showed that schedule flexibility marginally predicted physical activity (β = .18, *SE* = .09, p = .05), but that physical activity was not related to location flexibility. Neither schedule nor location flexibility were related to sleep. In relation to risk behaviors, location flexibility was marginally, negatively related to alcohol consumption (β = -.17, *S.E.* = .09, p = .06), but alcohol consumption was not significantly related to schedule flexibility. Both cigarette use and caffeine intake were unrelated to flexibility in schedule and location. These results fail to provide support for Hypothesis 1, because although schedule flexibility positively predicted physical activity

and location flexibility negatively predicted alcohol use, the results were only marginally significant.

In regards to demands, physical activity was not significantly related to work hours or commute time. Sleep was marginally negatively related to work hours (β = -08, *S.E.* = .05, p = .08), but not commute time. When examining relationships between demands and risk behaviors, work hours was positively related to alcohol consumption (β = .11, *S.E.* = .05, p = .02), but commute time did not show a significant association. Neither work hours nor commute time were significantly related to cigarette use. However, both work hours (β = .09, *S.E.* = .05, p = .04) and commute time (β = .11, *S.E.* = .05, p = .02) were significantly related to caffeine intake. Results partially support Hypothesis 4 that work hours were negatively related to sleep and positively related to alcohol and caffeine consumption. Results also partially support Hypothesis 9 with demonstrating that commute time was positively related to caffeine intake. Results are displayed in Table 2.

Health outcomes. To examine the direct effects of flexibility and demands on health outcome, each health outcome was regressed onto the predictors together in a single model. Schedule and location flexibility were unrelated to health outcomes of subjective health, BMI, role functioning, and burnout, providing no support for Hypothesis 2.

Analyses of demands and health outcomes found that subjective health and BMI were unrelated to work hours and commute time. Commute time was significantly related to role functioning (β = .14, *S.E.* = .05, p = .01), though the relationship was positive,

which was the opposite of what was hypothesized. Work hours did not present a significant relationship. Work hours, however, was marginally related to increased burnout (β = .08, *S.E.* = .05, p = .09), though commute time was not a significant predictor. Results fail to support Hypothesis 5 in that the positive relationship from work hours to burnout was only marginally significant. Results also fail to support Hypothesis 10 that predicted commute time to be negatively related to health outcomes. Results are displayed in Table 3.

Mediated Effects

To examine the proposed mediated effects, all direct pathways between flexibility and demands to health behaviors, flexibility and demands to health outcomes, and flexibility and demands to health outcomes through health behaviors were entered into a single model. When examining effects from flexibility, results showed that schedule flexibility predicted subjective health through physical activity (β = .05, *S.E.* = .03, p = .05), as well as BMI (β = -.04, *S.E.* = .01, p = .06), though the significance for each relationship was marginal. In each case, the direct effects were not significant. There were no significant relationships between flexibility and burnout or role functioning through health behaviors. These results fail to provide support to Hypothesis 3, which proposed that flexibility in schedule and location would improve health outcomes through improved health behaviors.

When examining relationships between demands and health, results showed that work hours marginally predicted subjective health through sleep (β = -.02, *S.E.* = .01, p = .10). Work hours also displayed a marginally significant relationship to burnout through

sleep (β = .03, *S.E.* = .02, p = .09), as well as to role functioning (β = -.02, *S.E.* = .01, p = .10). The overall indirect effect for work hours to burnout was also marginally significant (β = .04, *S.E.* = .02, p = .06), as was the total effect (β = .09, *S.E.* = .05, p = .08). However, with presenting only marginal significance, these results fail to support Hypothesis 6, which predicted that health outcomes would be negatively related to work hours through decreased health behaviors.

In regards to commute time, the overall indirect effect from commute time to BMI was marginally significant (β = .02, *S.E.* = .01, p = .08), though none of the specific indirect effects through health behaviors were significant. Commute time also displayed an overall significant direct effect (β = .17, *S.E.* = .05, p <.01) and total effect (β = .15, *S.E.* = .05, p <.01) to role functioning, though none of the specific indirect effects through health behaviors were significant, and the relationship was positive, unlike what was expected. These results fail to provide support for Hypothesis 11, which stated that health outcomes would be negatively related to commute time through decreased health behaviors. All results are displayed in Tables 4 through 7.

Moderated Effects

Because many of the interaction terms were built from latent variables, each interaction effect was ran in separate model in order to maximize the likelihood of model convergence. Each model included relationships between predictors of flexibility, demands, and an interaction term (e.g., schedule flexibility × work hours) to each health behavior. The model also included relationships between flexibility, demands, and health behaviors to each health outcome.

Results did not provide support for Hypothesis 7 or Hypothesis 8, as the interaction between schedule flexibility and work hours was not significantly related to any of the health behaviors, nor was the interaction between location flexibility and work hours. The interactions for schedule flexibility and commute time, and for location flexibility and commute time were also not significantly related to any of the health behaviors, failing to provide support for Hypothesis 12 and Hypothesis 13. The interaction between schedule flexibility and FSSB was not related to any of the health behaviors, nor was the interaction between location and flexibility and FSSB, failing to support Hypothesis 14 and Hypothesis 15.

The interaction between work hours and FSSB was significantly related to sleep (β = .02, *S.E.* = .01,p <.01). Work hours was not significantly related to sleep in the model, however the interaction between work hours and FSSB displayed a positive association with sleep, in which FSSB buffered the negative effect of work hours. These results provide partial support for Hypothesis 16. Hypothesis 17, which predicted that FSSB would moderate the relationships between work hours and health behaviors to health outcomes was not supported. The interaction between commute time and FSSB to sleep was also significant (β = .05, *S.E.* = .03, p = .04). Much like with work hours, commute time was not significantly related to sleep in the model, however the interaction between commute time and FSSB displayed a positive association with sleep, in which FSSB buffered the negative effect of commute time. These results provide partial support for Hypothesis 18. Hypothesis 19, which predicted that FSSB would moderate the

relationships between commute time and health behaviors to health outcomes was not supported. Results for interactions are displayed in Table 8.

Research Questions

In order to provide some insight into each of the proposed research questions, a comparison of correlations and significant pathways was made for each of the variables. When comparing the available information towards Research Question 1, schedule flexibility was more consistently related to health behaviors and health outcomes in comparison to location flexibility. When using the results to help answer Research Question 2, the health behavior of physical activity presented a marginally significant, direct relationship to flexibility, as well a marginal mediated relationship to subjective health. In regards to Research Question 3, the health outcome of burnout was the only health outcome related to both schedule and location flexibility in correlational analyses. Research Question 4 discussed which health outcome would be most related to which health behavior, in which subjective health stands out, as it was significantly correlated with four of the five measured health behavior variables. In regards to Research Question 5, the demand of work hours was most consistently related to health. When considering Research Question 6, caffeine intake was the health behavior that displayed a significant direct effect with both work hours and commute time. Lastly, for Research Question 7, the health outcome of burnout was most consistently, negatively related to demands.

CHAPTER ELEVEN

DISCUSSION

Flexible work arrangements have been tied to a number of positive outcomes for employees and organizations alike, suggesting such policies are an effective and mutually beneficial solution to enhance the effectiveness and well-being of workers and employers. Increased schedule flexibility has been linked to positive outcomes such as decreased work-family conflict, enhanced satisfaction, productivity, and retention (Allen et al., 2015; Civian et al., 2008; Galinsky et al., 2011). Offering flexibility can also contribute to employee health behaviors and health outcomes. Past research has begun to link flexibility to relevant health indicators such as increased physical activity, lower reports of stress, and lower cholesterol (Halpern, 2005; Thomas & Ganster, 1995). However the research base documenting relationships between flexible work arrangements and employee health is limited, lacking a strong body of support, detailed examination of flexibility and health, and longitudinal designs that examine relationships over time. Therefore, the current study sought to help answer questions surrounding the influence of flexible work arrangements to employee health.

Summary of Results

Flexibility in schedule and work location at Time 1 were hypothesized to predict the health outcomes of lowered burnout, BMI, increased role functioning and overall subjective health at Time 2 through improved health behaviors of physical activity, sleep, and decreased risk behaviors at Time 2. Additionally, demands of work hours and commute time were expected to negatively influence health outcomes through decreased

health behaviors. Furthermore, flexibility was hypothesized to buffer the negative associations. The current study also hypothesized interactive influences between FSSB and flexibility to health behaviors, with higher levels of FSSB enhancing the positive relationships, as well as for FSSB and demands, with higher levels of FSSB helping to mitigate the negative relationships.

Results showed small correlations between schedule flexibility and physical activity, location flexibility and lower caffeine intake, and FSSB with sleep. Work hours were related to alcohol use, and commute time was related to caffeine intake. For health outcomes, schedule flexibility, location flexibility, and FSSB were related to lowered burnout.

Analyses done through structural equation modeling did not show any significant relationships between flexibility and health behaviors, nor any direct effects from flexibility to health outcomes. These findings fail to provide support for Hypothesis 1 and Hypothesis 2. There were also no significant relationships from flexibility to health outcomes through health behaviors, providing no support for Hypothesis 3.

Demands displayed more significant relationships with health. Work hours were positively related to alcohol consumption and caffeine intake. Commute time was also related to caffeine intake, but did not present significant relationships with any of the other health behaviors. These results partially support Hypothesis 4 and Hypothesis 9. In regards to health outcomes, work hours was not significantly related to the measured health outcomes, providing no support for Hypothesis 5. Commute time was related to the health outcome role functioning, though the relationship was positive, failing to

provide support for Hypothesis 10. When examining the hypothesized mediated pathways, there were no significant relationships from work hours to health outcomes through health behaviors, failing to provide any support for Hypothesis 6. Commute time did not present any significant indirect effects through health behaviors, failing to provide support for Hypothesis 11.

When examining the hypothesized interactive effects, flexibility did not significantly interact with demands to predict health behaviors, failing to support Hypothesis 7 and Hypothesis 8, and Hypothesis 12 and Hypothesis 13. FSSB did not significantly moderate the relationships between flexibility and health behaviors, providing no support for Hypothesis 14 and Hypothesis 15. FSSB, however, did significantly interact with work hours and with commute time to predict sleep. Both work hours and commute time were not directly related to sleep in the model, but FSSB significantly moderated the relationships, showing increased level of sleep for higher levels of FSSB effects. These results provide partial support for Hypothesis 16 and Hypothesis 18. Hypothesis 17 and 19, which predicted that FSSB would moderated the mediated relationships between work hours and commute time with health outcomes through health behaviors were not supported.

In sum, relationships between flexibility and health did not present any significant direct effects or mediated pathways to health outcomes through health behaviors, though some relationships did marginally approach significance. Work hours were significantly related to alcohol and caffeine consumption, while commute time was related to caffeine

intake. Lastly, interactions between FSSB and work hours, and between FSSB and commute time were significantly related to sleep.

Overall, the findings illustrate a lack of support for the notion that flexibility influences employee health. The lack of significant pathways may be due to the rigorous design of the study, as relationships examined over time and with objective outcomes often present lower effects. Additionally, the current study used a mixed sample of MTurk respondents, and very few participants reported agreement with having flexible work arrangements. In contrast, many of the past studies showcasing positive associations have been focused on a single organization with a strong focus on employee flexibility. Grzywacz and colleagues (2007) similarly hypothesized this rationale for why their results linking flexibility to physical activity were significant in contrast to other studies using more general samples. In the current study, only up to 19% of participants reported they agreed or strongly agreed that items asking on schedule flexibility, and only 10% for any one item for location flexibility. This is in stark contrast to data from Butler and colleagues (2009) in which only 6% of participants responding disagree or strongly disagree in regards to having adequate flexibility at work.

Differences in past findings may also be partially explained through notions that certain employees benefit more from flexibility than others, such as those with dependent children (Jennings, Sinclair, & Mohr, 2016). Additionally, past researchers have stated that flexibility may be related to only certain aspects of health, as was seen in the current results (Casey & Grzywacz, 2008). In sum, past research has also often presented null effects, such as from Lapierre and Allen (2006), who found no relationship between

employees' engagement in flextime and their self-reported physical health or well-being. However, a multitude of others have contradicted such studies and displayed positive associations, such as with flexibility and self-reported health (Butler et al., 2009), continuing to emphasize the need for additional research in this domain.

Theoretical and Practical Contributions

Even though many of the proposed hypotheses were not supported, the results presented in this study advance the literature through measuring schedule and location flexibility in a comprehensive model and testing their direct effects, mediated pathways, and interactive influences. This appears to be the first study to examine the relationship of flexible work arrangements to health outcomes as mediated through health behaviors, offering novel findings to the current literature. These findings do not present a strong body of evidence to support that flexibility and demands influence employee health outcomes through health behaviors. The lack of significant results may indicate that relationships between cross-sectional self-reports of overall flexibility and overall health ratings are more likely to appear than are relationships that are examined over time, relationships between more specific measures (e.g., role functioning), and more objective measures (e.g., BMI).

Nonetheless, the presence of connections between flexibility and health, demands and health, and demands and FSSB emphasize the importance of considering both work and non-work factors for employees. As explained by Grzywacz and colleagues (2007), there is not yet a strong body of evidence to argue for flexibility practices to be the main focus of organizations looking to increase employee health, yet there is enough there for

flexible work arrangements to warrant attention and consideration. To highlight a few of the connections in the present study, the results showing correlational relationships between flexibility and health behaviors, such as schedule flexibility and physical activity, help to support that those who are able to choose their work time are also more likely to exercise more days in the week. This relationship is in line with past research (e.g., Grzywacz et al., 2008), and emphasizes the importance of continuing to pursue understanding and utilizing flexibility as a means to help improve employee health. Both types of flexibility were also correlated with the health outcome of burnout, aligning with past findings which highlight a negative relationship between employees using flexible work arrangements and reported levels of burnout (Grzywacz et al., 2008), and highlighting that in addition to increasing the positive, flexibility may have the potential to decrease negative outcomes experienced by employees. Interaction effects between demands and FSSB help provide support for the aforementioned Job Demands-Resources model (Bakker & Demerouti, 2007), in demonstrating FSSB as a buffer from negative effects from work hours and commute time on sleep, and emphasize the importance of considering supervisor behaviors as a valuable resource in helping to support employees. Moreover, connections back to burnout speak to the need for organizations to seek to optimize the employee experience both in and out of work. This dual focus is not only for the well-being of their employees, but also for the benefit of the company itself, in that work arrangements are related to non-work behaviors (e.g., sleep), as well as outcomes that directly effect performance and productivity (e.g., burnout).

However, the inconsistency in results again emphasizes the need to approach flexibility and health in a specific manner. These results support that not all flexible work arrangements will exhibit the same effects, and flexibility will not be related to various health behaviors and outcomes in the same way. Researchers should continue to piece apart and investigate the specific linkages between different facets of flexibility and health and the pathways through which they occur. The specificity of the results here allow for organizations to recognize which facets of flexibility, demands, and health are most related and which are not, which can help to set more accurate expectations and better target efforts. Organizations should target their interventions and initiatives based upon their most desired outcomes. As one example, through identifying moderating effects of FSSB for demands, results highlight that it is more than just increasing formal policies for flexibility, but rather in increasing supervisor supportive behaviors and fostering a work environment that supports flexibility that helps to mitigate negative relationships with employee health.

Organizations and managers looking to increase employee flexibility are also encouraged to explore options that work best for their situation, focusing on putting control in the hands of employees. While the most common examples include having employees set their own hours, work location, utilize compressed work weeks, or easily take time off or rearrange their schedule as needed, there are also options for positions outside of salaried roles and knowledge workers. For example, organizations may also offer solutions for scheduled employees to more easily swap shifts as needed, gather employee input when forming schedules, and offer support when employees need to tend

to other life demands. Past research has shown success in increasing flexibility for hourly workers. As one example, an intervention created by Lambert (2009) increasing predictability and flexibility in the scheduling of retail workers was linked to lower reports of stress and work-family conflict.

Moreover, in order to help organizations implement successful flexible working arrangements for their employees, it would be a worthwhile investment to run a series of pilot interventions in introducing flexible work policies and enhancing the flexibility climate and support for flexibility that are aimed towards specific health behaviors and outcomes of interest. This approach will help to further identify which practices best influence which health aspects, and will prevent organizations from overcommitting to a large scale flexibility change in which they may fail to see the benefits they expected or most hoped for.

As discussed above, the lack of significant results in the current study compared to past findings may be partially explained by differences in sample. More specifically, researchers have suggested those with samples from a single organization with a high support for flexibility may be more likely to find significant connections between flexibility and health (Grzywacz et al., 2007), suggesting that organizations should focus not only on the policies they implement, but the climate they sit in. Based on this notion, organizations should seek to create a climate that supports, encourages, and celebrates flexibility. Butler and colleague (2009) have discussed that without a strong culture of support, flexible work arrangements may be inconsistent, and at times unavailable or

discouraged, thus limiting the positive effects access to flexible work arrangements may bring.

Lastly, the lack of significant relationships between flexibility and health in the present study suggest that organizations may want to pair initiatives to include promotion for employee health simultaneously. Research by Tabak and colleagues (2016) found that as employees reported more flexibility at work, they were more likely to use onsite health facilities such as exercise rooms and showers. The authors also found participants cited common barriers of scheduling conflicts and shiftwork, and that those who worked most hours in the sample were more likely to use breaks during the day to engage in physical activity. Companies could leverage and merge these approaches through highlighting the benefits of and providing encouragement for healthy behaviors while at the same time providing the flexibility to engage in them. As a first step, it could be as simple as making the connection clear. Rather, instead of advertising for employees to "Take time when you need it", programs could offer examples of how flexibility can benefit health more directly such as "Taking time to enroll in an exercise class you've been wanting to try" or "Taking an extended lunch break to take advantage of the onsite gym".

In sum, the results presented have sparked a number of important theoretical and practical insights for researchers and applied practitioners to consider as they continue to map the best way to utilize flexible work arrangements to benefit the employee experience, employee health, and organizational success. There are also some limitations to consider when interpreting the results of the present study and areas that lend themselves to be addressed in future research studies, each discussed below.

Limitations and Directions for Future Research

The study presented a strong design through examining connections between multiple facets of flexibility and health longitudinally, however, there are a number limitations to consider. While the current study examined relationships with gender, age, socioeconomic status, and family factors, there was not any consideration of personality variables or other individual differences. It is recommended that future research expand upon the results to examine additional influences such as these. Also, the data were collected through Amazon's Mechanical Turk survey tool and included many self-report variables. Therefore, the accuracy of the data and relationships presented are reliant on the honesty of the respondents in answering truthfully to all demographic questions (e.g., being located in the US, working full-time), as well as each of the measured items (e.g., height and weight).

Further, it would have been ideal if the study design had included three measurement points in comparison to two, capturing predictors (e.g., flexibility) at Time 1, mediators (e.g., sleep) at Time 2, and outcomes (e.g., BMI) at Time 3. Future studies are encouraged to adopt this tri-part approach and to continue to examine longitudinal relationships. However, researchers are advised to consider their timing carefully. It is possible that the time period of around three months between the two measurement points was not the ideal waiting period in order to capture effects between flexibility and health. Researchers could potentially examine more temporal effects in shorter time frames, such as flexibility and exercise or diet patterns in weekly reports, as well as what could appear

as more latent effects in extended periods, such as flexibility and BMI over the course of a year.

Additionally, the present study explored relationships from flexibility and demands to health behaviors and health outcomes, but did not explore direct connections to the organization's bottom line (i.e., lowering health care costs), as it has been suggested that such effects may take longer to appear (Butler et al., 2009), and such data may not be readily available through a Mechanical Turk sample. Future studies are encouraged to examine such relationships in using a longitudinal design with a longer time frame and more access to organizational data.

Lastly, an additional area for future research is in further exploration of commute time. The present study examined the reported average commute time to the employee's primary work location, though it is possible that employees travel to multiple locations for work. In addition, other components of commute time may influence employee outcomes, such as amount of traffic, route taken (e.g., highway versus back roads), commuting alone or with others, mileage or distance versus time, and the times of day which they commute. Past research has also highlighted the lack of evidence surrounding employee commutes, emphasizing the need for additional research (Allen et al., 2015; Morrow, 2010).

Conclusions

Recognizing the importance and timeliness of guiding flexible work arrangements, and organizations' interests in improving employee health and well-being and decreasing health costs, the current study sought to add to a narrowly examined area

of research to document relationships between different aspects of flexibility to health behaviors to health outcomes over time. Results showed some evidence of positive relationships between flexibility and health behaviors, and negative relationships between demands and health behaviors and outcomes. Findings also highlight an interactive effect from FSSB in helping to buffer the negative effect from demands of work hours and commute time to sleep. However, many of the pathways proposed were nonsignificant, and thus results should be interpreted and presented carefully and generalizations should be avoided. The hope is that these findings help to advance the current literature, aiding in the understanding of flexibility and its' relationship with health behaviors and outcomes, inspiring future research studies, and helping guide organizations towards actionable recommendations for improving employee health.

CHAPTER TWELVE

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CHAPTER THIRTEEN

APPENDICES

APPENDIX A

Flexibility

1. I have the freedom to choose my work schedule

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

2. I have the freedom to choose the location where I complete my work (e.g. home, office, etc.)

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3. I have the freedom to change the times that I begin and end each workday due to my personal preferences/needs

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

4. I have the freedom to change the location where I conduct my work each day due to my personal preferences/needs

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

APPENDIX B

Demands

Work Hours

1. How many hours do you currently work per week in your primary job? _____

Commute Time

1. Thinking about your primary job, about how long (in minutes) does it take you to get to work, from the time you leave your house to the time you arrive at your office/worksite?

1	2	3	4	5	6	7	8	9
Less than 15 minutes	15-30 minutes	30-45 minutes	45-60 minutes	60-75 minutes	75-90 minutes	90-105 minutes	105-120 minutes	More than 120 minutes

APPENDIX C

Family Supportive Supervisor Behaviors

1. Your supervisor makes you feel comfortable talking to him/her about your conflicts between work and non-work

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

2. Your supervisor demonstrates effective behaviors in how to juggle work and non-work issues

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3. Your supervisor works effectively with employees to creatively solve conflicts between work and non-work

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

4. Your supervisor organizes the work in your department or unit to jointly benefit employees and the company

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

APPENDIX D

Health Behaviors

Physical Activity

1. On how many days in a typical week did you engage in aerobic or physical activity, such as walking, jogging, or cycling? _____

Sleep

1. In a typical week, on how many days did you get adequate sleep? _____

Risk Behaviors

1. On average, how many days per week did you drink alcohol? _____

2. On how many days in a typical week did you smoke a cigarette? _____

3. On how many days in a typical week did you drink a caffeinated beverage? _____

APPENDIX E

Health Outcomes

Subjective Health

1. In general, would you say your health is excellent, good, fair, or poor?

1	2	3	4	5
Poor	Fair	Good	Very Good	Excellent

BMI

1. How tall are you (in ft.)? _____
2. How tall are you (in inches)? _____
3. Approximately how much do you weigh (in lbs.)? _____
4. What is the size of your waist (in inches)? _____

Role Functioning

1. Does your health keep you from working at a job, doing work around the house or going to school?

Yes, for more than 3 months Yes, for 3 months or less No

2. Have you been unable to do certain kinds or amounts of work, housework, or schoolwork because of your health?

Yes, for more than 3 months Yes, for 3 months or less No

Shirom-Melamed Burnout Measure (SMBM)

How Do You Feel at Work?

Below are a number of statements that describe different feelings that you may feel at work. Please indicate how often, in the past 30 workdays, you have felt each of the following feelings:

			How often have you felt this way at work?						
			Never or almost never	Very infrequently	Quite infrequently	Sometimes	Quite frequently	Very frequently	Always or almost always
P	1.	I feel tired	1	2	3	4	5	6	7
P	2.	I have no energy for going to work in the morning	1	2	3	4	5	6	7
P	3.	I feel physically drained	1	2	3	4	5	6	7
P	4.	I feel fed up	1	2	3	4	5	6	7
P	5.	I feel like my "batteries" are "dead"	1	2	3	4	5	6	7
P	6.	I feel burned out	1	2	3	4	5	6	7
C	7.	My thinking process is slow	1	2	3	4	5	6	7
C	8.	I have difficulty concentrating	1	2	3	4	5	6	7
C	9.	I feel I'm not thinking clearly	1	2	3	4	5	6	7
C	10.	I feel I'm not focused in my thinking	1	2	3	4	5	6	7
C	11.	I have difficulty thinking about complex things	1	2	3	4	5	6	7

E	12. I feel I am unable to be sensitive to the needs of coworkers and customers	1	2	3	4	5	6	7
E	13. I feel I am not capable of investing emotionally in coworkers and customers	1	2	3	4	5	6	7
E	14. I feel I am not capable of being sympathetic to co-workers and customers	1	2	3	4	5	6	7

Note. The letters before each item represent the three subscales of the Shirom-Melamed Burnout Measure (SMBM). The three subscales are: P = physical fatigue; E= emotional exhaustion; and C= cognitive weariness.

APPENDIX F

Demographics

1. What is your gender? ____Male ____Female

2. What is your age? _____

3. What is the highest level of education you have completed?

   Less than high school
   High school
   Associate's Degree (2 years)
   Bachelor's Degree
   Master's Degree
   Doctoral Degree (E.g., J.D., M.D., Ph.D.)

4. How many jobs do you currently hold? _____

5. Thinking about your primary job, please indicate the occupation that is most similar to the one you are currently employed in.

   Management
   Business and Financial operations
   Computer and Mathematical Occupations
   Architecture and Engineering
   Life, Physical, and Social Science
   Community and Social Services
   Legal
   Education, Training, and Library
   Arts, Design, Entertainment, Sports and Media
   Healthcare Practitioners and Technical
   Healthcare Support
   Protective Service
   Food Preparation and Serving-related
   Building and Grounds Cleaning and Maintenance
   Personal Care and Service
   Sales and Related Occupations
   Office and Administrative Support
   Farming, Fishing, and Forestry
   Construction and Extraction
   Installation, Maintenance, and Repair
   Production
   Transportation and Material Moving
   Military Specific Occupations

TABLES

Table 1. *Raw means, standard deviations, and correlations between composite variables of flexibility, demands, family supportive supervisor behaviors, health behaviors, and health outcomes.*

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Schedule Flexibility	3.51	1.79	--													
2. Location Flexibility	2.67	1.78	.70**	--												
3. Work Hours	41.31	5.0	.08	.16**	--											
4. Commute Time	2.18	1.14	-.04	-.02	.11*	--										
5. FSSB	4.95	1.48	.24**	.21**	-.08	-.08	--									
6. Physical Activity	3.05	2.09	.09*	.04	.01	-.05	.04	--								
7. Sleep	4.54	1.88	.07	.08	-.07	-.06	.17*	.14*	--							
8. Alcohol Use	1.15	1.76	<.01	-.06	.10*	.02	-.08	.05	.02	--						
9. Cigarette Use	1.29	2.63	-.08	-.09	-.01	-.01	.01	-.08	-.06	.23**	--					
10. Caffeine Use	4.89	2.67	-.07	-.10*	.08	.12*	-.07	-.01	-.09	.11*	.20**	--				
11. Subjective Health	2.78	0.92	.08	.09	.01	.03	.08	.29**	.30**	-.07	-.17**	-.11*	--			
12. BMI	28.22	7.83	-.08	-.09	.01	.06	-.05	-.20**	-.10*	-.03	-.07	.10*	-.41**	--		
13. Role Functioning	2.88	0.41	-.04	-.03	-.05	.13*	.05	.07	.27**	.06	-.03	-.06	.30**	-.19**	--	
14. Burnout	3.04	1.37	-.13**	-.14**	.06	.02	-.36**	-.15**	-.41**	.07	.07	.06	-.29**	.12**	-.13**	-

*$p < .05$. **$p < .01$

Table 2. *Direct effects of predictors on health behaviors.*

		β	*SE* for β	*p*
Predictor	**Schedule Flexibility**			
Outcomes	Physical Activity	.18	.09	.05
	Sleep	.04	.10	.68
	Alcohol	.12	.09	.19
	Cigarettes	-.05	.10	.59
	Caffeine	.04	.09	.67
Predictor	**Location Flexibility**			
Outcomes	Physical Activity	-.11	.09	.22
	Sleep	.06	.09	.49
	Alcohol	-.17	.09	.06
	Cigarettes	-.04	.09	.64
	Caffeine	-.14	.09	.10
Predictor	**Work Hours**			
Outcomes	Physical Activity	.01	.05	.77
	Sleep	-.08	.05	.08
	Alcohol	.11*	.05	.02
	Cigarettes	.01	.05	.95
	Caffeine	.09	.05	.05
Predictor	**Commute Time**			
Outcomes	Physical Activity	-.04	.05	38
	Sleep	-.05	.05	.30
	Alcohol	.01	.05	.88
	Cigarettes	-.01	.05	.76
	Caffeine	.11*	.05	.02

*$p < .05$. **$p < .01$.

Table 3. *Direct effects of predictors on health outcomes.*

		β	*SE* for *β*	*p*
Predictor	**Schedule Flexibility**			
Outcomes	Subjective Health	.08	.09	.42
	BMI	-.04	.10	.71
	Role Functioning	-.01	.10	.89
	Burnout	-.12	.10	.26
Predictor	**Location Flexibility**			
Outcomes	Subjective Health	.03	.09	.77
	BMI	-.07	.09	.45
	Role Functioning	.01	.09	.93
	Burnout	-.07	.10	.44
Predictor	**Work Hours**			
Outcomes	Subjective Health	-.01	.05	.98
	BMI	.02	.05	.70
	Role Functioning	-.06	.05	.26
	Burnout	.08	.05	.09
Predictor	**Commute Time**			
Outcomes	Subjective Health	.03	.05	.51
	BMI	.05	.05	.26
	Role Functioning	.14*	.05	.01
	Burnout	<.01	.05	1.0

*$p < .05$. **$p < .01$.

Table 4. *Mediated effects of predictors on subjective health through health behaviors.*

		β	*SE* for β	*p*
Predictor	**Schedule Flexibility**			
Mediators	Physical Activity Indirect	.05	.03	.05
	Sleep Indirect	.02	.03	.47
	Alcohol Indirect	<.01	.01	.34
	Cigarettes Indirect	.02	.01	.75
	Caffeine Indirect	<.01	<.01	.67
	Total Indirect Effect	.06	.04	.13
	Direct Effect	.02	.09	.84
	Total Effect	.08	.10	.41
Predictor	**Location Flexibility**			
Mediators	Physical Activity Indirect	-.03	.02	.19
	Sleep Indirect	.01	.02	.67
	Alcohol Indirect	.01	.01	.27
	Cigarettes Indirect	<.01	.01	.52
	Caffeine Indirect	.01	.01	.29
	Total Indirect Effect	<.01	.04	.86
	Direct Effect	.02	.08	.81
	Total Effect	.03	.09	.77
Predictor	**Work Hours**			
Mediators	Physical Activity Indirect	<.01	.01	.77
	Sleep Indirect	-.02	.01	.10
	Alcohol Indirect	-.01	.01	.23
	Cigarettes Indirect	<.01	.01	.95
	Caffeine Indirect	-.01	.01	.25
	Total Indirect Effect	-.03	.02	.12
	Direct Effect	.03	.04	.49
	Total Effect	<.01	.05	1.0

*$p < .05$. **$p < .01$.

Table 4. *Mediated effects of predictors on subjective health through health behaviors (cont'd).*

Predictor	**Commute Time**	β	*SE* for β	*p*
Mediators	Physical Activity Indirect	-.01	.01	.42
	Sleep Indirect	-.01	.01	.33
	Alcohol Indirect	<.01	<.01	.91
	Cigarettes Indirect	<.01	.01	.76
	Caffeine Indirect	-.01	.01	.23
	Total Indirect Effect	-.03	.02	.15
	Direct Effect	.06	.04	.18
	Total Effect	.03	.05	.50

*$p < .05$. **$p < .01$.

Table 5. *Mediated effects of predictors on BMI through health behaviors.*

		β	*SE* for *β*	*p*
Predictor	**Schedule Flexibility**			
Mediators	Physical Activity Indirect	-.04	.01	.06
	Sleep Indirect	<.01	.01	.54
	Alcohol Indirect	<.01	.01	.83
	Cigarettes Indirect	<.01	.01	.75
	Caffeine Indirect	<.01	.01	.67
	Total Indirect Effect	-.04	.03	.17
	Direct Effect	<.01	.10	.99
	Total Effect	-.04	.10	.70
Predictor	**Location Flexibility**			
Mediators	Physical Activity Indirect	.02	.02	.20
	Sleep Indirect	<.01	.01	.68
	Alcohol Indirect	<.01	.01	.83
	Cigarettes Indirect	.01	.01	.52
	Caffeine Indirect	-.02	.01	.18
	Total Indirect Effect	.01	.03	.59
	Direct Effect	-.08	.09	.36
	Total Effect	-.07	.09	.45
Predictor	**Work Hours**			
Mediators	Physical Activity Indirect	<.01	.01	.77
	Sleep Indirect	<.01	.01	.33
	Alcohol Indirect	<.01	.01	.83
	Cigarettes Indirect	<.01	.01	.95
	Caffeine Indirect	.01	.01	.14
	Total Indirect Effect	.01	.01	.47
	Direct Effect	.01	.05	.86
	Total Effect	.02	.05	.70

*$p < .05$. **$p < .01$.

Table 5. *Mediated effects of predictors on BMI through health behaviors (cont'd).*

Predictor	**Commute Time**	β	*SE* for β	p
Mediators	Physical Activity Indirect	.01	.01	.42
	Sleep Indirect	<.01	<.01	.45
	Alcohol Indirect	<.01	<.01	.92
	Cigarettes Indirect	<.01	.01	.76
	Caffeine Indirect	.01	.01	.10
	Total Indirect Effect	.02	.01	.08
	Direct Effect	.03	.05	.53
	Total Effect	.05	.05	.27

*$p < .05$. **$p < .01$.

Table 6. *Mediated effects of predictors on burnout through health behaviors.*

		β	*SE* for *β*	*p*
Predictor	**Schedule Flexibility**			
Mediators	Physical Activity Indirect	-.02	.01	.14
	Sleep Indirect	-.03	.04	.47
	Alcohol Indirect	.01	.01	.33
	Cigarettes Indirect	<.01	<.01	.79
	Caffeine Indirect	<.01	<.01	.97
	Total Indirect Effect	-.04	.04	.36
	Direct Effect	-.08	.09	.37
	Total Effect	-.12	.10	.23
Predictor	**Location Flexibility**			
Mediators	Physical Activity Indirect	.01	.01	.26
	Sleep Indirect	-.02	.04	.67
	Alcohol Indirect	-.01	.01	.24
	Cigarettes Indirect	<.01	<.01	.70
	Caffeine Indirect	<.01	.01	.98
	Total Indirect Effect	-.02	.04	.65
	Direct Effect	-.05	.09	.56
	Total Effect	-.07	.10	.46
Predictor	**Work Hours**			
Mediators	Physical Activity Indirect	<.01	<.01	.77
	Sleep Indirect	.03	.02	.09
	Alcohol Indirect	.01	.01	.21
	Cigarettes Indirect	<.01	<.01	.95
	Caffeine Indirect	<.01	<.01	.97
	Total Indirect Effect	.04	.02	.06
	Direct Effect	.05	.05	.32
	Total Effect	.09	.05	.08

*$p < .05$. **$p < .01$.

Table 6. *Mediated effects of predictors on burnout through health behaviors (cont'd).*

Predictor	**Commute Time**	β	*SE* for β	p
Mediators	Physical Activity Indirect	<.01	.01	.44
	Sleep Indirect	.02	.02	.33
	Alcohol Indirect	<.01	<.01	.91
	Cigarettes Indirect	<.01	<.01	.79
	Caffeine Indirect	<.01	.01	.97
	Total Indirect Effect	.02	.02	.27
	Direct Effect	-.03	.04	.55
	Total Effect	<.01	.05	.94

*$p < .05$. **$p < .01$.

Table 7. *Mediated effects of predictors on role functioning through health behaviors.*

		β	*SE* for *β*	*p*
Predictor	**Schedule Flexibility**			
Mediators	Physical Activity Indirect	.01	.01	.42
	Sleep Indirect	.02	.03	.47
	Alcohol Indirect	.01	.01	.33
	Cigarettes Indirect	<.01	<.01	.81
	Caffeine Indirect	<.01	.01	.67
	Total Indirect Effect	.03	.03	.29
	Direct Effect	-.05	.10	.62
	Total Effect	-.02	.10	.88
Predictor	**Location Flexibility**			
Mediators	Physical Activity Indirect	-.01	.01	.47
	Sleep Indirect	.01	.03	.67
	Alcohol Indirect	-.01	.01	.25
	Cigarettes Indirect	<.01	<.01	.75
	Caffeine Indirect	.01	.01	.25
	Total Indirect Effect	.01	.03	.83
	Direct Effect	<.01	.09	.99
	Total Effect	.01	.10	.95
Predictor	**Work Hours**			
Mediators	Physical Activity Indirect	<.01	<.01	.78
	Sleep Indirect	-.02	.01	.10
	Alcohol Indirect	.01	.01	.22
	Cigarettes Indirect	<.01	<.01	.95
	Caffeine Indirect	-.01	.01	.22
	Total Indirect Effect	-.02	.02	.18
	Direct Effect	-.04	.05	.44
	Total Effect	-.06	.05	.23

*$p < .05$. **$p < .01$.

Table 7. *Mediated effects of predictors on role functioning through health behaviors (cont'd).*

Predictor	**Commute Time**	β	*SE* for β	*p*
Mediators	Physical Activity Indirect	<.01	<.01	.55
	Sleep Indirect	-.01	.01	.33
	Alcohol Indirect	<.01	<.01	.91
	Cigarettes Indirect	<.01	<.01	.82
	Caffeine Indirect	-.01	.01	.19
	Total Indirect Effect	-.02	.02	.15
	Direct Effect	.17**	.05	<.01
	Total Effect	.15**	.05	<.01

*$p < .05$. **$p < .01$.

Table 8. *Moderated effects of demands by FSSB to health behaviors.*

		β	*S.E.* for β	p
Predictor	**Work Hours (WH)**			
	WH-Physical Activity	.02	.05	.74
Interaction	WHxFSSB-Physical Activity	<.01	.01	.67
	WH-Sleep	-.07	.06	.25
Interaction	WHxFSSB-Sleep	.02**	.01	.01
	WH-Alcohol	.10	.05	.04
Interaction	WHxFSSB-Alcohol	-.01	.01	.14
	WH-Cigarettes	.01	.05	.88
Interaction	WHxFSSB-Cigarettes	.01	.01	.39
	WH-Caffeine	.09	.05	.05
Interaction	WHxFSSB-Caffeine	<.01	.01	.51
Predictor	**Commute Time (CT)**			
	CT-Physical Activity	-.04	.05	.42
Interaction	CTxFSSB-Physical Activity	.01	.03	.74
	CT-Sleep	-.03	.05	.51
Interaction	CTxFSSB-Sleep	.05*	.03	.04
	CT-Alcohol	<.01	.05	.96
Interaction	CTxFSSB-Alcohol	-.03	.03	.21
	CT-Cigarettes	-.01	.04	.89
Interaction	CTxFSSB-Cigarettes	.04	.02	.16
	CT-Caffeine	.11**	.04	.01
Interaction	CTxFSSB-Caffeine	<.01	.02	.96

*$p < .05$. **$p < .01$.

FIGURES

Figure 1. Model of Hypothesized Pathways.

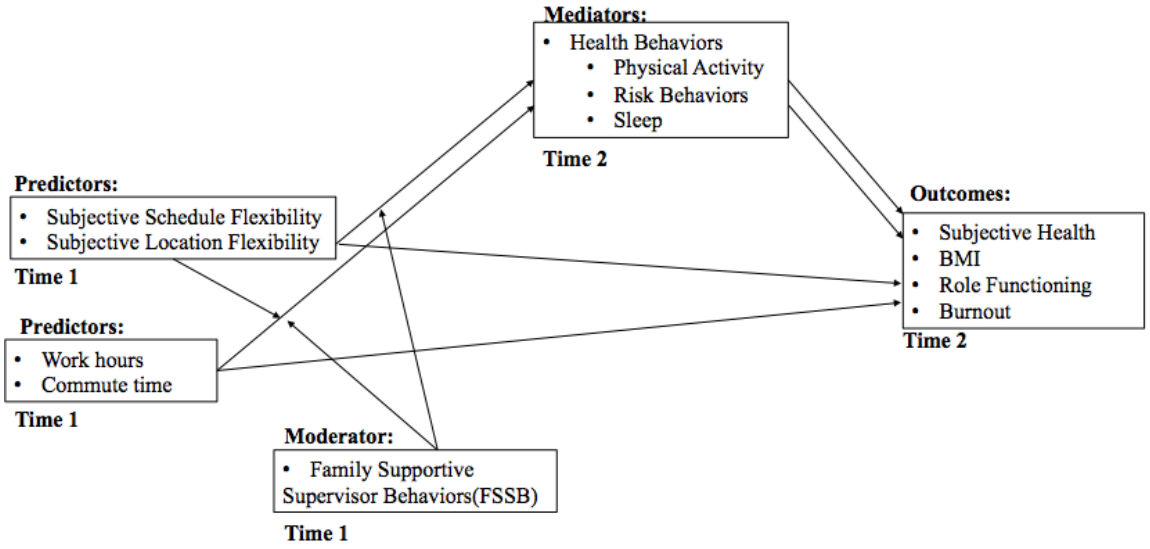

Figure 2. Interaction between work hours and FSSB on sleep.

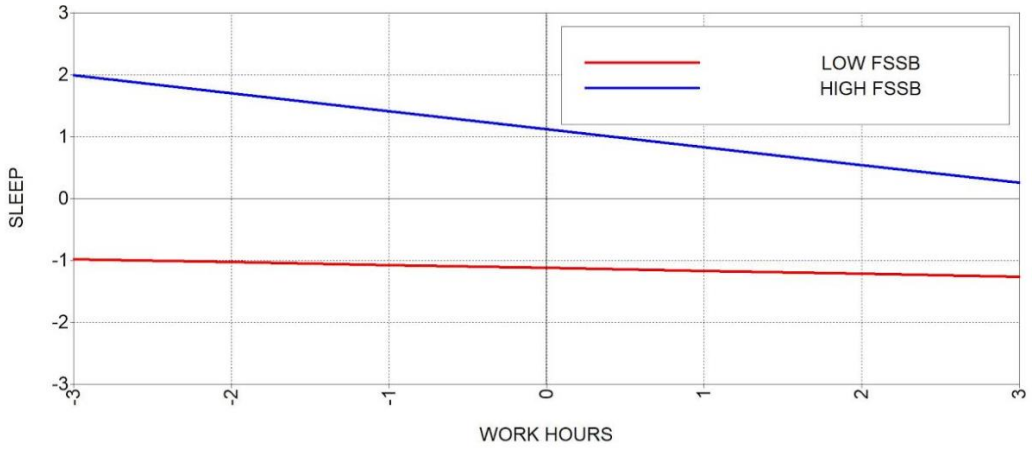

Figure 3. Interaction between commute time and FSSB on sleep.